FECFANOVA, Yu. M. Cand Geolog-Mineralog Sci

Dissertation: "Morphology and Stratigraphy of the Cheilostomata Neogene System of the Ponto-Caspian Basin." Moscow Order of the Labor Red Banner Petroleum Inst imeni Academician I. M. Gubkin 10 Jun 47

SO: Vechernyaya Moskva, Jun 1947 (Proj #17836)

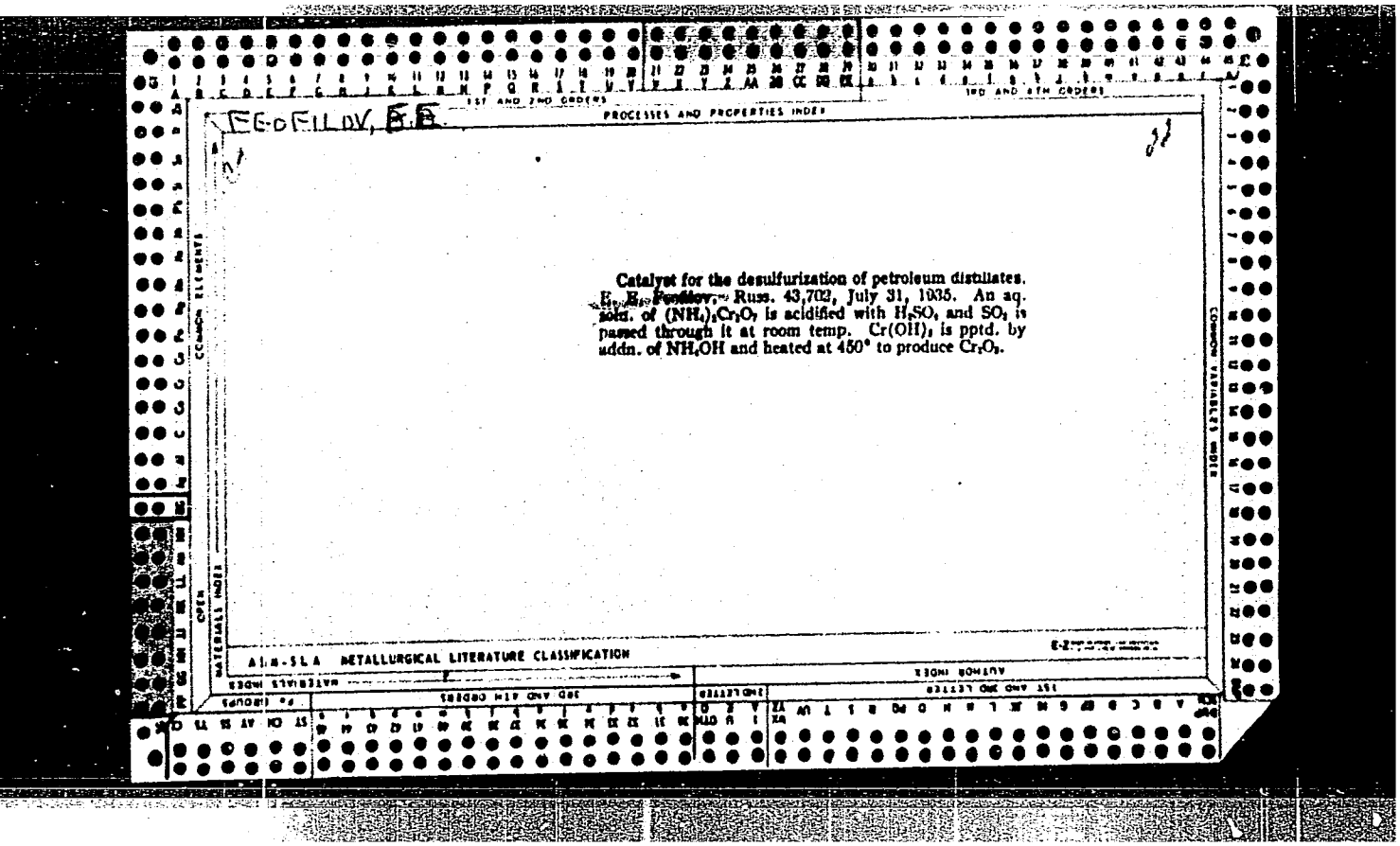
FEOFANOVA, Yu.M.

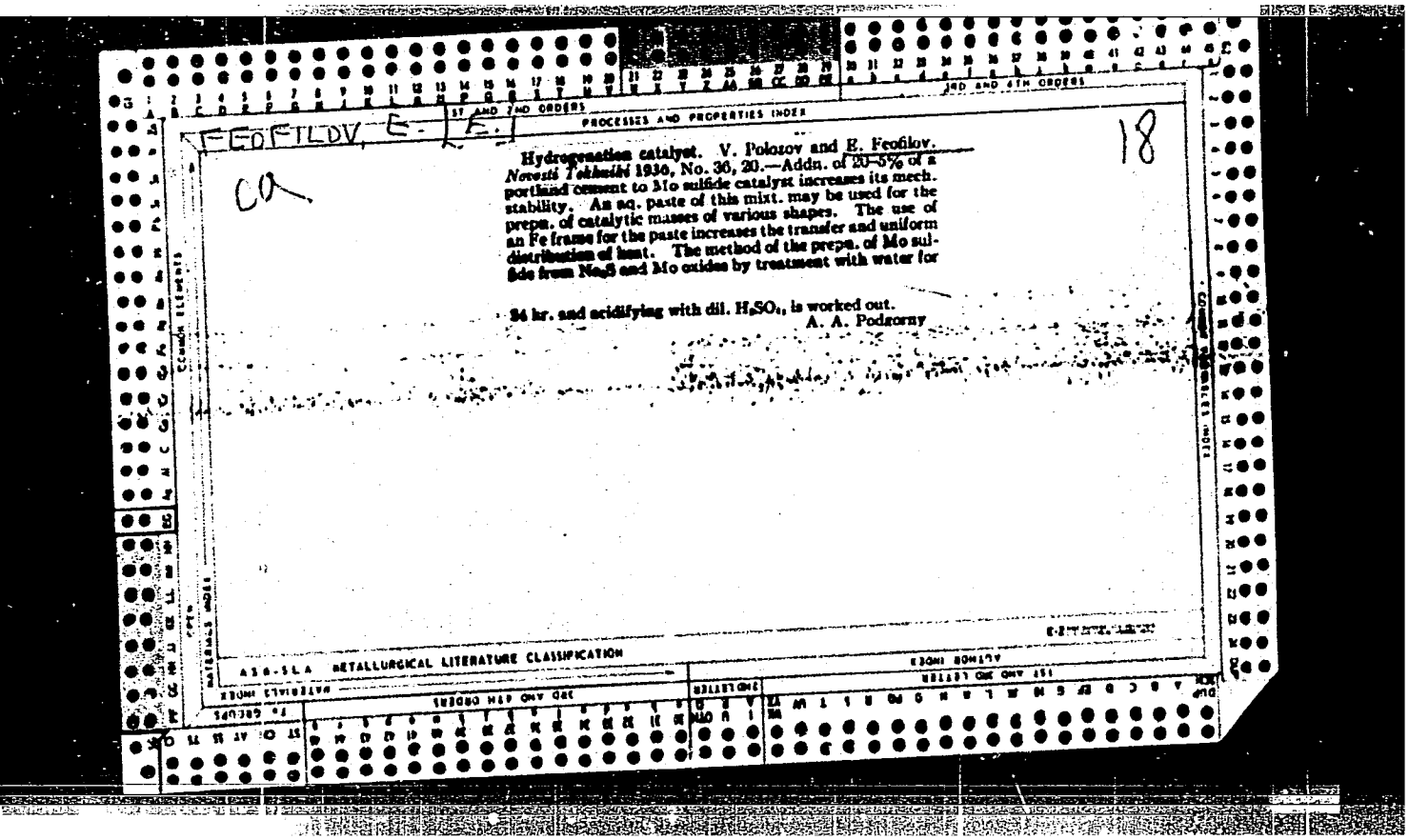
Study of upper Tertiary bryozoa of Moldavia and Crimea. Biul.MOIP. Otd.geol. 28 no.3:42-63 '53. (MLRA 6:11)
(Moldavia--Polyzoa, Fossil) (Polyzoa, Fossil--Moldavia)
(Crimea--Polyzoa, Fossil) (Polyzoa, Fossil--Crimea)

FEOFANOVA, Yu.M.

New Paleogene Bryozoa of Fergana. Paleont. zhur. no.1:60-72 '65. (MIRA 18:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni Gubkina.





FEOFILOV, E.

CA

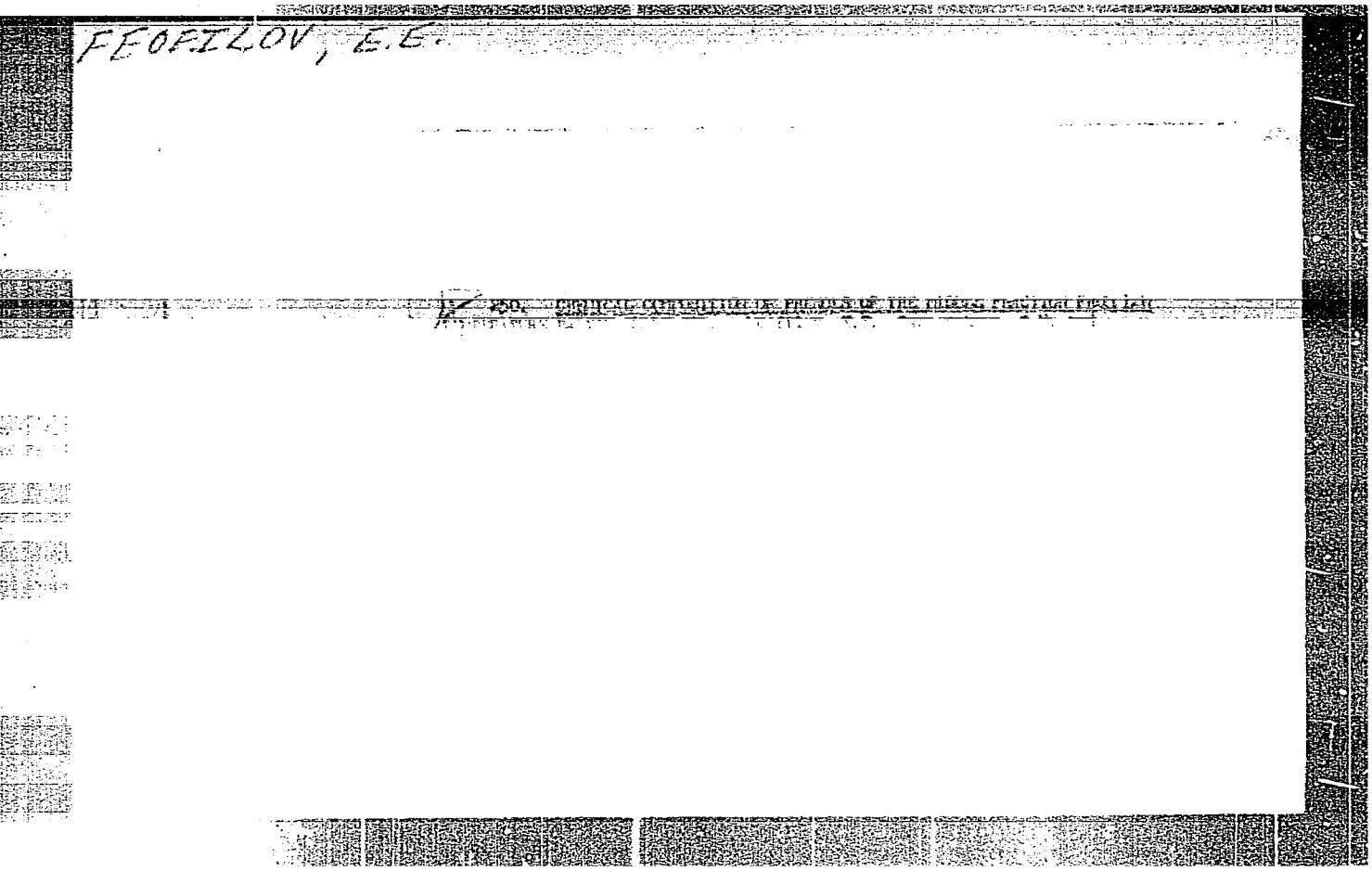
18

PROCESSES AND PROPERTIES INDEX

Hydrogenation catalyst. V. Polozov and E. Feofilov. *Novosti Tekhniki* 1936, No. 36, 20.—Addn. of 20–5% of a portland cement to Mo sulfide catalyst increases its mech. stability. An aq. paste of this mixt. may be used for the prepn. of catalytic masses of various shapes. The use of an Fe frame for the paste increases the transfer and uniform distribution of heat. The method of the prepn. of Mo sulfide from Na_2S and Mo oxides by treatment with water for 24 hr. and acidifying with dil. H_2SO_4, is worked out.

A. A. Podzorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



FEOFILOV, G.L.

Some notes on the nomenclature of bronchi and bronchopulmonary segments. Arkh. anat., gist. i embr. 48 no.5: 102-104 My '65. (MIRA 19:1)

1. Legochnoye otdeleniye (ispolnyayushchiy obyazannosti zav. - kand. med. nauk G.L. Feofilov) Instituta eksperimental'noy biologii i meditsiny Sibirskogo otdeleniya AN SSSR, Novosibirsk. Submitted January 31, 1963.

L 11933-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG
ACC NR: AP6001654 SOURCE CODE: UR/0051/65/019/006/0973/0975

AUTHOR: Zonn, Z. N.; Ioffe, V. A.; Feofilov, P. O.

ORG: none

TITLE: Luminescence of chromium and manganese ions in lanthanum aluminate crystals

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 973-975

TOPIC TAGS: manganese, chromium, ion, lanthanum compound, single crystal, luminescence, aluminate

ABSTRACT: The authors discuss certain results of the study of the spectra and luminescence duration of isoelectronic ions Cr^{3+} and Mn^{4+} (electronic configuration $3d^3$), introduced into the crystal lattice of $LaAlO_3$. Both monocrystals grown from a solution in a melt as well as powdered samples were considered. No difference in the spectroscopic characteristics of the monocrystals and powders was noted. Crystal luminescence, located in the red and near-infrared portions of the spectrum was excited by an SVDSh-250 mercury lamp through a light filter consisting of a $CuSO_4$ solution, which had the effect of blocking the longwave portion of the energizing light. At small chromium concentrations

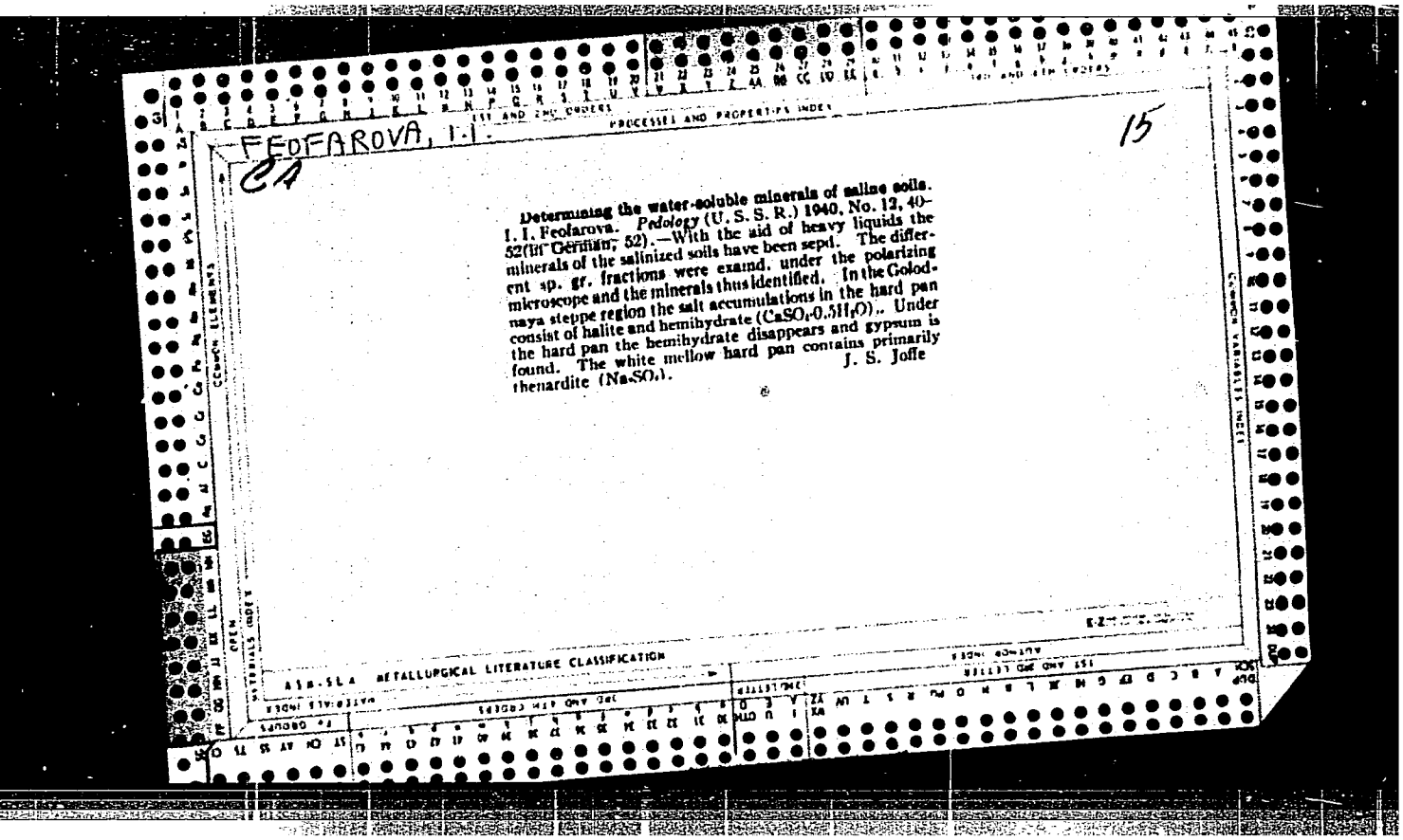
Card 1/2 UDC: 535.373.1

L 11933-66
ACC NR: AP6001654

the luminescence spectrum consists practically of a doublet with wavelengths of 7335 and 7338 Å. When the Cr^{3+} concentration is increased to 0.5% and above, the form of the luminescence spectrum undergoes definite modifications, which are described. With concentrations amounting to several percent, luminescence of Cr^{3+} in $LaAlO_3$ is entirely quenched. The luminescence spectra at different chromium percentages are illustrated. The luminescence is interpreted as a $^3E \rightarrow {}^4A_2$ transition in the Mn^{4+} ion. Orig. art. has: 3 figures.

SUB CODE: 20 / SUBM DATE: 20Mar65 / ORIG REF: 003 / OTH REF: 008

Card 2/2



FEOFAROVA, I. I.

CA

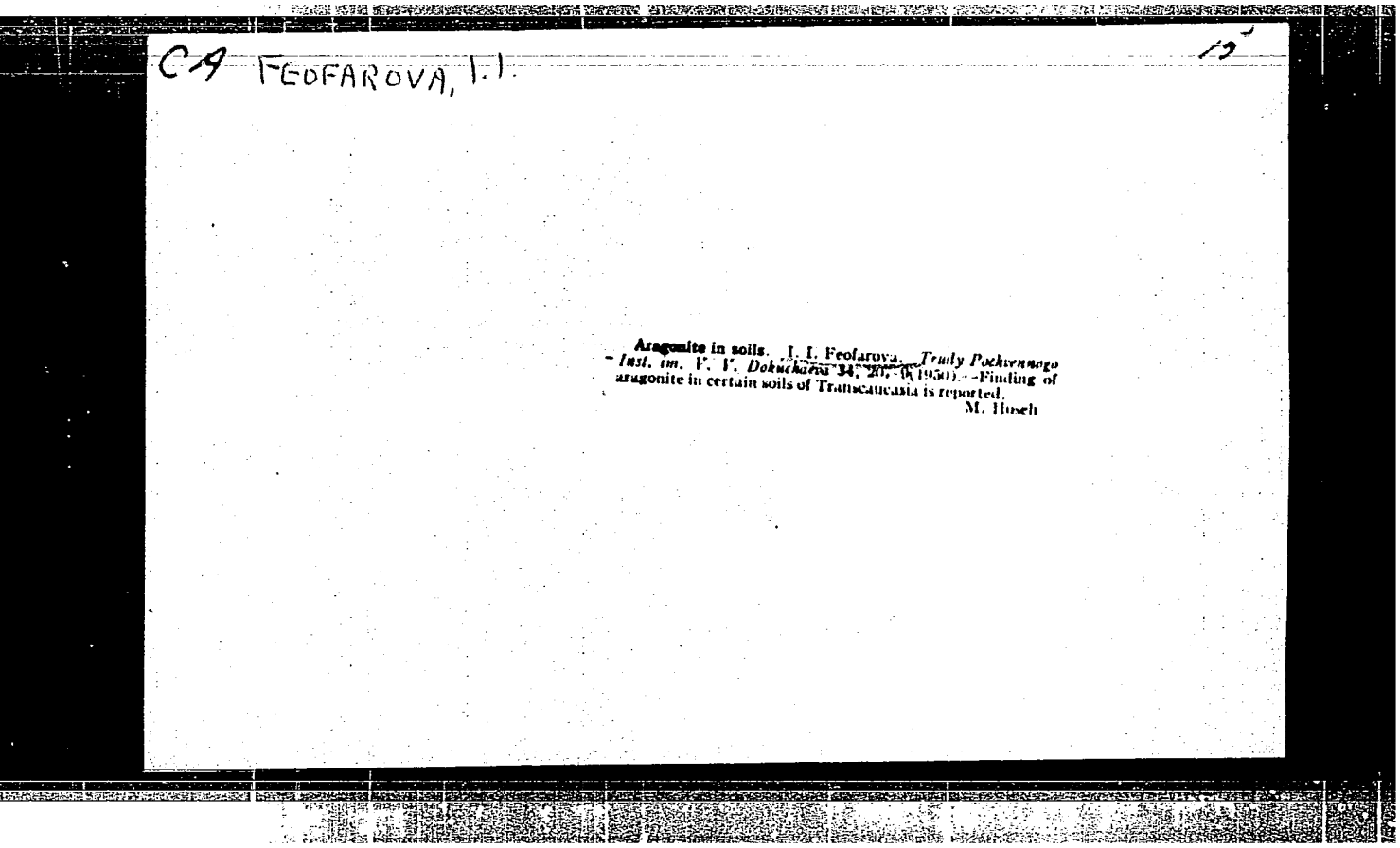
15

Determining the water-soluble minerals of saline soils. I. I. Feofarova. *Pedology* (U. S. S. R.) 1940, No. 12, 40–52(in German; 52).—With the aid of heavy liquids the minerals of the salinized soils have been sepd. The different sp. gr. fractions were exaind. under the polarizing microscope and the minerals thus identified. In the Golodnaya steppe region the salt accumulations in the hard pan consist of halite and hemihydrate ($CaSO_4 \cdot 0.5H_2O$),. Under the hard pan the hemihydrate disappears and gypsum is found. The white mellow hard pan contains primarily thenardite (Na_2SO_4).

J. S. Joffe

CA FEOFAROVA, I. I.

Pseudomorphosis of calcite from gypsum in soils. I. I. Feofarova. *Trudy Pochvennogo Inst. im. V. V. Dokuchaeva* 34, 202-6(1950).—Field observations in the Fergan Valley (Transcaucasus) and lab. expts. to test the field observations are reported. M. Hoseh



C-9 FEOFAROVA, I.I.

19

Aragonite in soils. I. I. Feofarova. *Trudy Pochvennago Inst. im. V. V. Dokuchaeva* 34, 20–6 (1950).—Finding of aragonite in certain soils of Transcaucasia is reported.

M. Hoseh

Some data on the mineral composition of siliceous sprinkling in forest steppe soils. A. A. Rode and I. I. Feofarova. *Pochvovedenie* 1955, No. 9, 58–60.—The siliceous specks of a forest steppe soil were sepd. from the soil mass by scraping them with a sharp rod. Analysis of this material in comparison with that of the soil shows a concn. of SiO_2 in the specks or siliceous sprinkling, varying, resp., from 49 to 67 in the specks and from 30 to 43% in the soil. The feldspars (primarily orthoclase with some plagioclase) vary in the soil from 7 to 11% and in the specks from 11 to 14%. It is suggested that the mass of the specks represents the same material as that of the soil. However, the specks have lost their humus materials and clay aggregates. —I. S. Joffe

Feofarova, I. I.

USSR/Soil Science - Physical and Chemical Properties of Soils. J-3

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10491

Author : Feofarova, I.I.
Inst : -
Title : A Micromorphological Characterization of the Takyry

Orig Pub : Takyry Zap. Turkmenii i puti ikh s.-kh. osvoyeniya, Moskva, Akad Nauk SSSR, 1956, 351-380

Abstract : A study of the structure of slides taken from various horizons of the takyry of the Kopet-Dagh mountain plain, using a polarized microscope, has disclosed the cellular character of takyr porosity, the presence of gelatine-like newly-formed "secondary clay" in the lower part of the takyr crust, and also the existence of /osolodeniye/ spots in its upper part. Finely dispersed forms of carbonates were shown to coat the walls of the closed pores; the presence of some decarbonatized spots was also discovered. The great mobility of organic substances in the takyry is noted.

Card 1/1

FEOFAROVA, I.I.

Sulfates in saline soils. Trudy pochv.inst. 52:89-103 '58.
(MIRA 11:9)

(Alkali lands) (Sulfates)

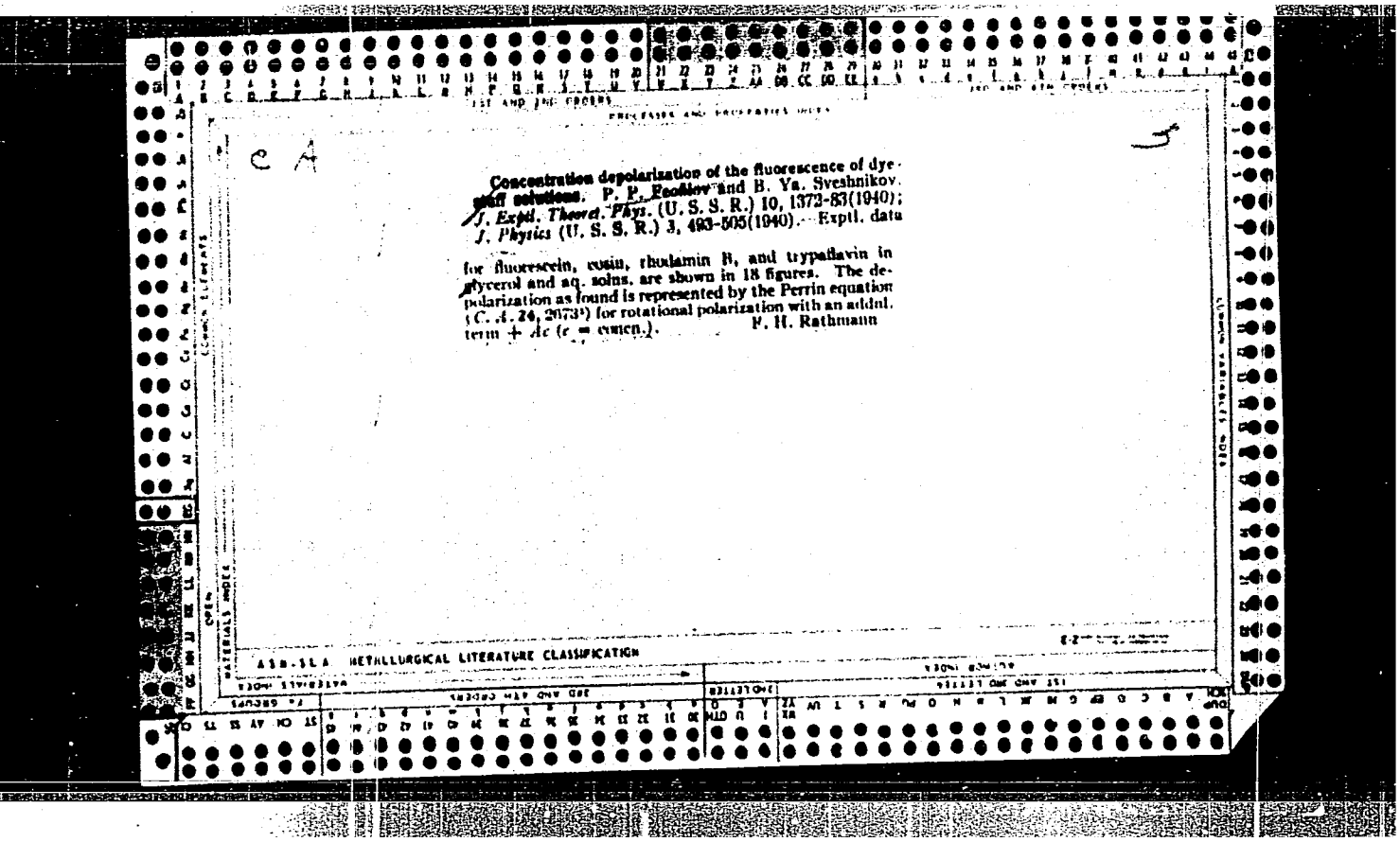
FEOFAROVA, I.I.

Applying the microscopic method for determining carbonates in saline soils. Trudy pochv.inst. 53:75-88 '58. (MIRA 11:9)
(Alkali lands) (Carbonates)

ZONN, S.V.; FEOFAROVA, I.I.

New soil type under dark green conifer forests of eastern Tibet.
Pochvovedenie no.6:11-20 Je '60. (MIRA 13:11)

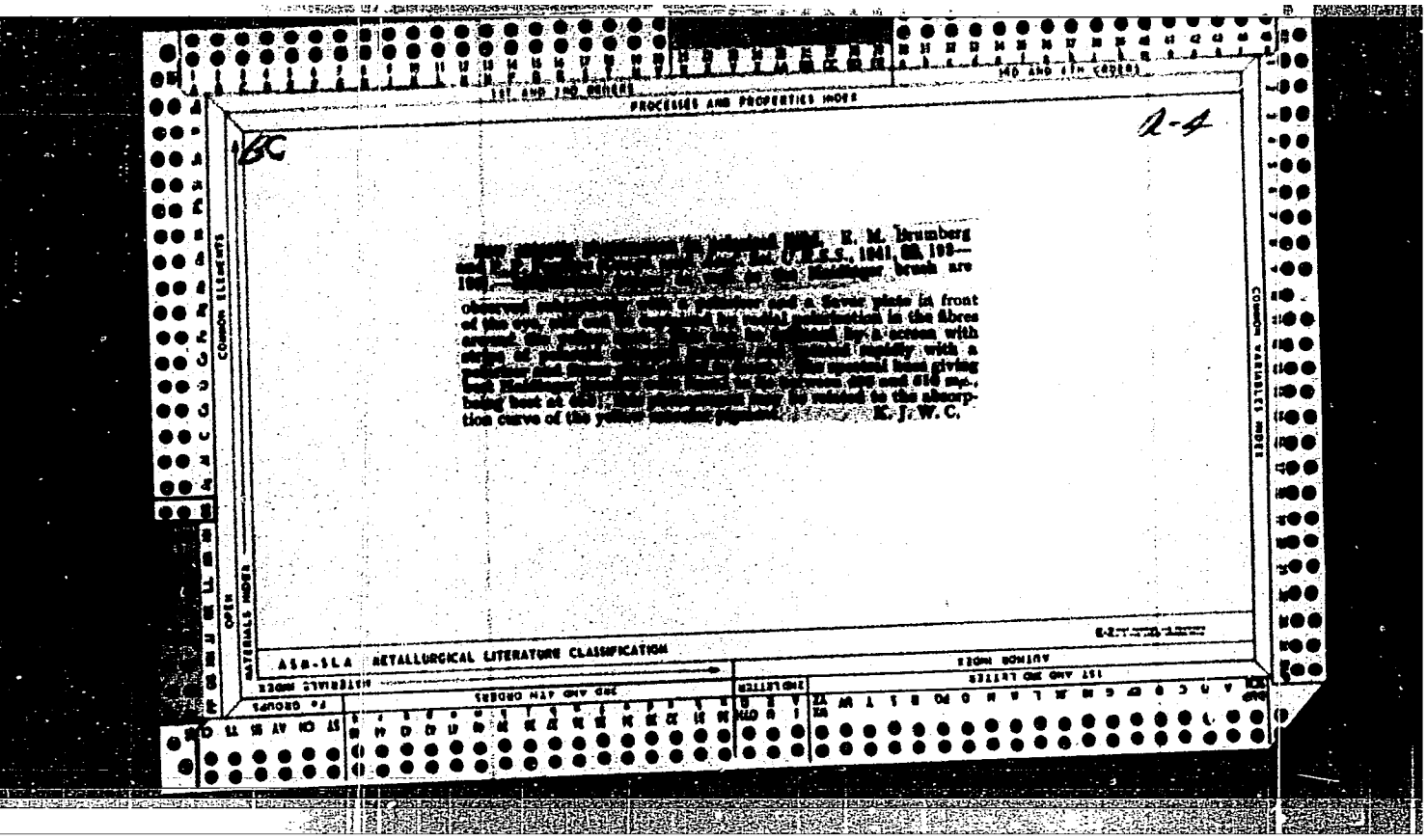
1. Laboratoriya lesovedeniya Akademii nauk SSSR.
(Tibet--Forest soils)



C A

Concentration depolarization of the fluorescence of dye-stuff solutions. P. P. Feofilov and B. Ya. Sveshnikov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 1373-83(1940); *J. Physics* (U. S. S. R.) 3, 493-505(1940). Exptl. data for fluorescein, eosin, rhodamin B, and trypaflavin in glycerol and aq. solns. are shown in 18 figures. The depolarization as found is represented by the Perrin equation (*C. A.* 24, 2073[1]) for rotational polarization with an addnl. term $+ kc$ (c = concn.). F. H. Rathmann

A 5 B - 5 L A METALLURGICAL LITERATURE CLASSIFICATION



FEOFILOV, P. P.

Inst. for Theor. Geoph., Acad. of Sci. USSR, Polucheno, (-1942-)

"Night Illumination and Spectral Composition of Night Light in Middle Latitudes,"

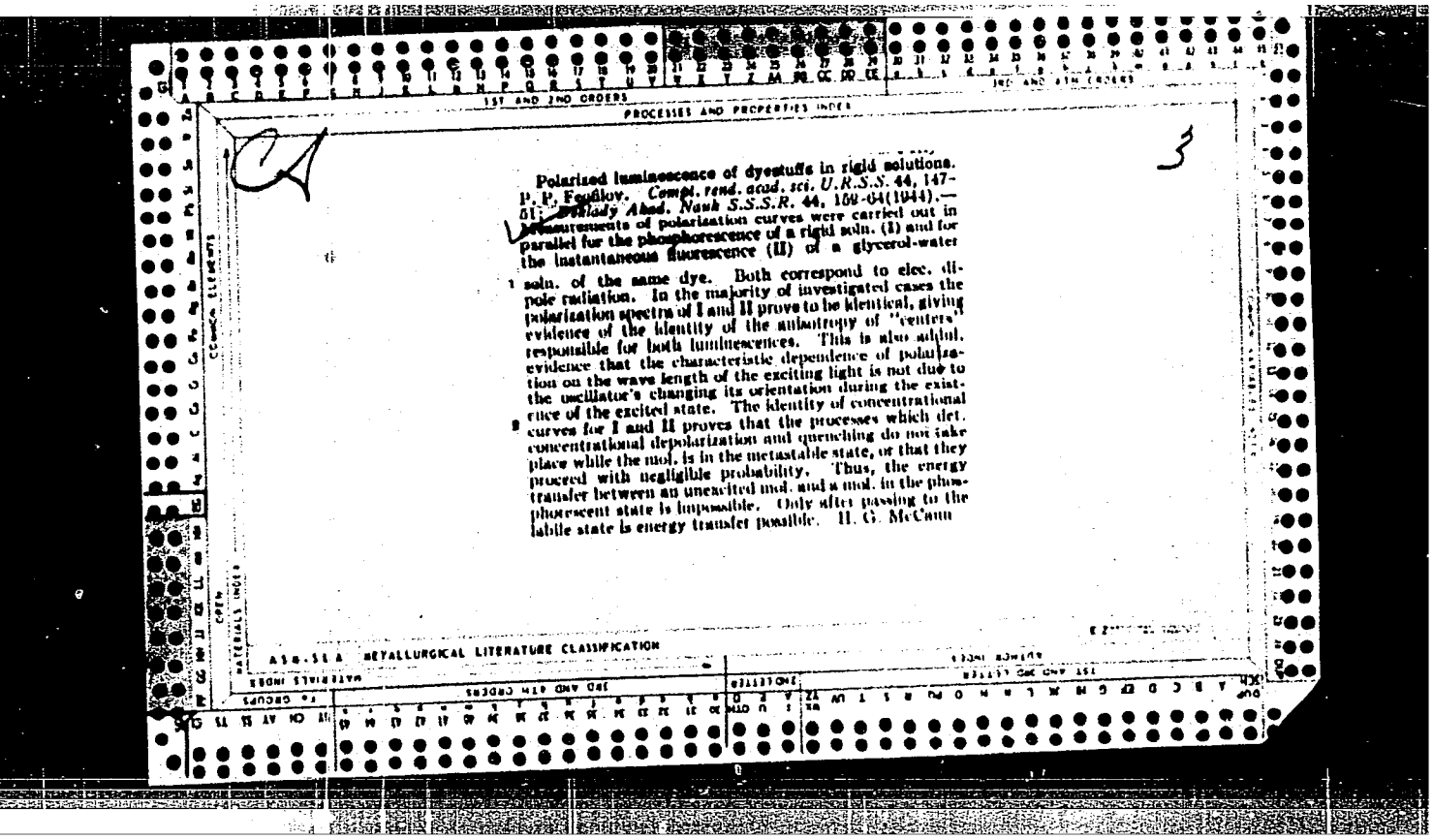
Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz., Nos 1 - 6, 1942.

Theory of concentrational depolarisation of fluorescence in solutions. S. I. Vavilov and P. P. Feofilov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **36**, 220—223).—The relation $1/p' - 1/p = A\tau c$ (p', p = degree of polarisation of fluorescence respectively with and without concn. depolarisation; τ = mean life of excited state; c = solute concn.; A const.) is deduced theoretically on the basis of excitation energy transfer by quantum-mechanical resonance.

A. J. E. W.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000412910009-5"

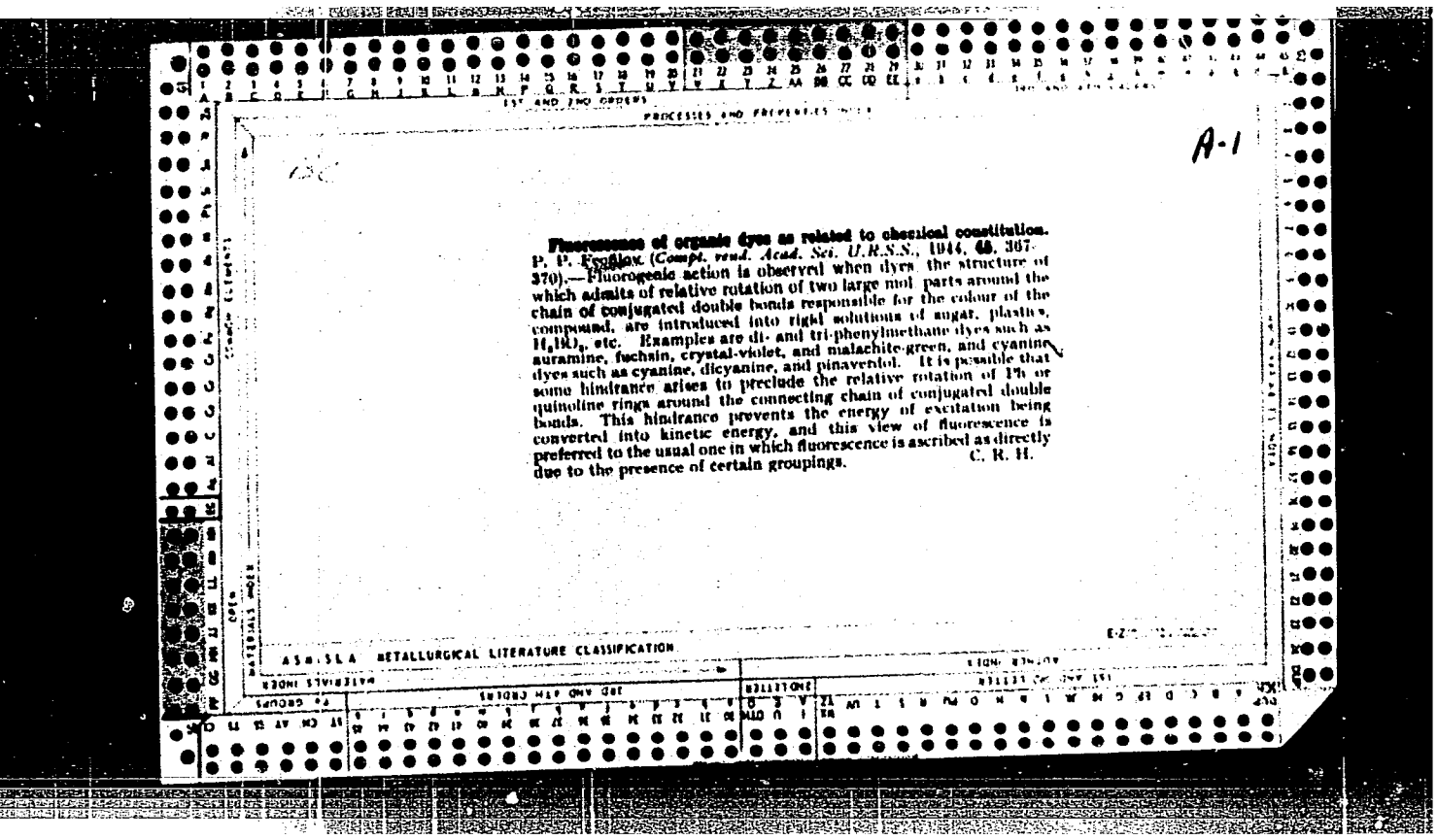
Polarisation of fluorescence and anisotropy of molecules of organic dyes. P. P. Feofilov. *J. Physics U.S.S.R.*, 1943, 7, 68—79).—Curves showing the dependence of polarisation of fluorescent light on the λ of the exciting light (polarisation spectra) are obtained for rhodamine-*B*, Na fluorescein, Na eosin (I), trypaflavine (II), acridine-orange (III), benzoflavin (IV), Na perylenetetracarboxylate, aesculin, and pinakryptol-yellow. These polarisation spectra are sp. for each dye. For (I)—(IV) the variation of dichroism of oriented mols. with λ is investigated, and there is a correspondence between this and the polarisation spectrum. This indicates that the angles between emitting and absorbing oscillators are not produced during the excitation, but are inherent in the mol. The anisotropy of the mols. can be interpreted by means of an oscillator model in which the fluorescing mol. is regarded as an emitting oscillator with a no. of absorbing oscillators rigidly coupled to it. A. J. M.



PROCESSES AND PROPERTIES INDEX

Polarized luminescence of dyestuffs in rigid solutions. P. P. Feofilov. *Compt. rend. acad. sci. U.R.S.S.* 44, 147-51; *Doklady Akad. Nauk S.S.S.R.* 44, 160-64(1944).—Measurements of polarization curves were carried out in parallel for the phosphorescence of a rigid soln. (I) and for the instantaneous fluorescence (II) of a glycerol-water soln. of the same dye. Both correspond to elec. dipole radiation. In the majority of investigated cases the polarization spectra of I and II prove to be identical, giving evidence of the identity of the anisotropy of "centers" responsible for both luminescences. This is also additional evidence that the characteristic dependence of polarization on the wave length of the exciting light is not due to the oscillator's changing its orientation during the existence of the excited state. The identity of concentrational curves for I and II proves that the processes which det. concentrational depolarization and quenching do not take place while the mol. is in the metastable state, or that they proceed with negligible probability. Thus, the energy transfer between an unexcited mol. and a mol. in the phosphorescent state is impossible. Only after passing to the labile state is energy transfer possible. H. G. McCann

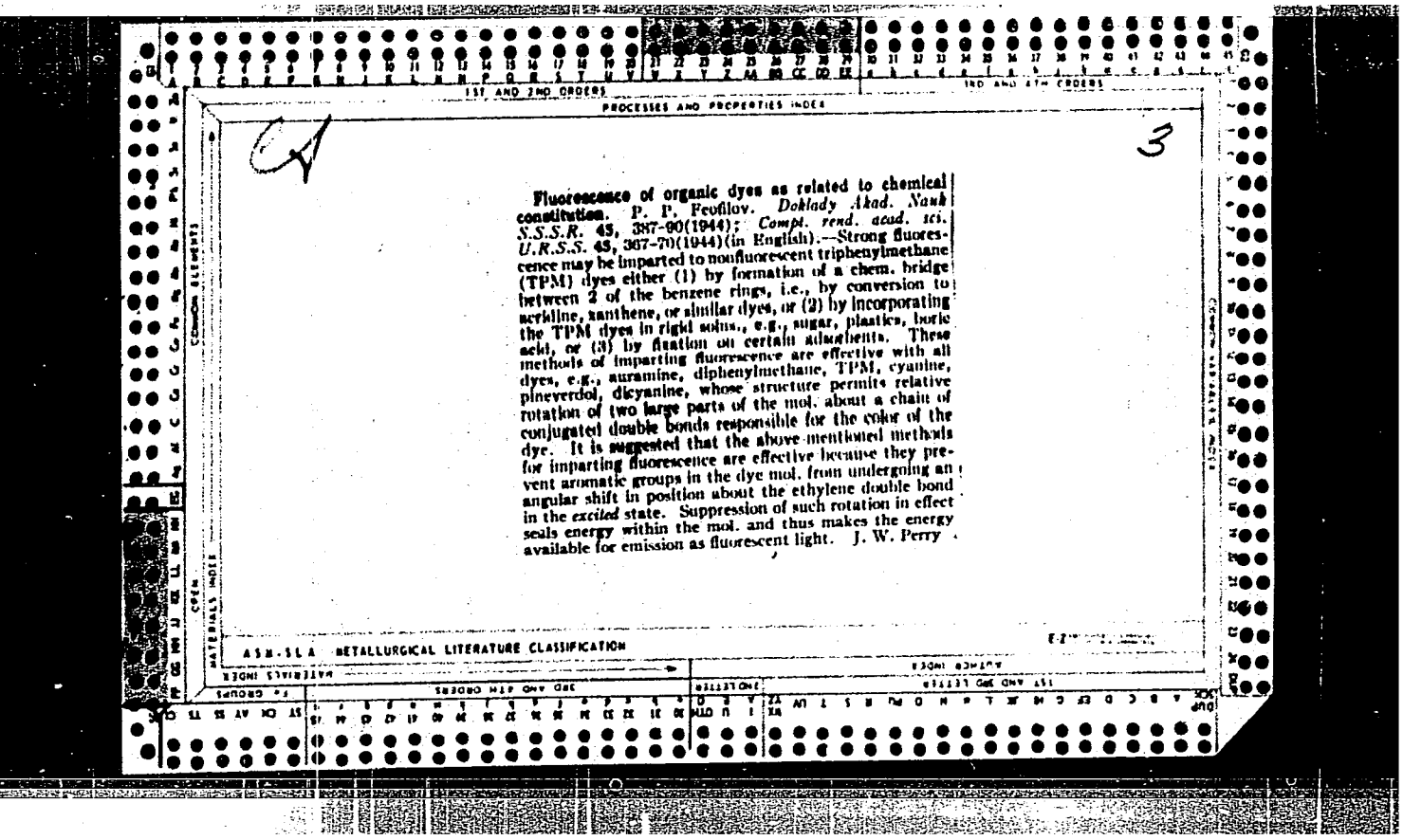
A58.51A METALLURGICAL LITERATURE CLASSIFICATION



A-1

Fluorescence of organic dyes as related to chemical constitution. P. P. Feofilov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1944, **45**, 367-370).—Fluorogenic action is observed when dyes, the structure of which admits of relative rotation of two large mol. parts around the chain of conjugated double bonds responsible for the colour of the compound, are introduced into rigid solutions of sugar, plastics, H_2BO_3, etc. Examples are di- and tri-phenylmethane dyes such as auramine, fuchsin, crystal-violet, and malachite-green, and cyanine dyes such as cyanine, dicyanine, and pinaverdol. It is possible that some hindrance arises to preclude the relative rotation of Ph or quinoline rings around the connecting chain of conjugated double bonds. This hindrance prevents the energy of excitation being converted into kinetic energy, and this view of fluorescence is preferred to the usual one in which fluorescence is ascribed as directly due to the presence of certain groupings. C. R. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

4

3

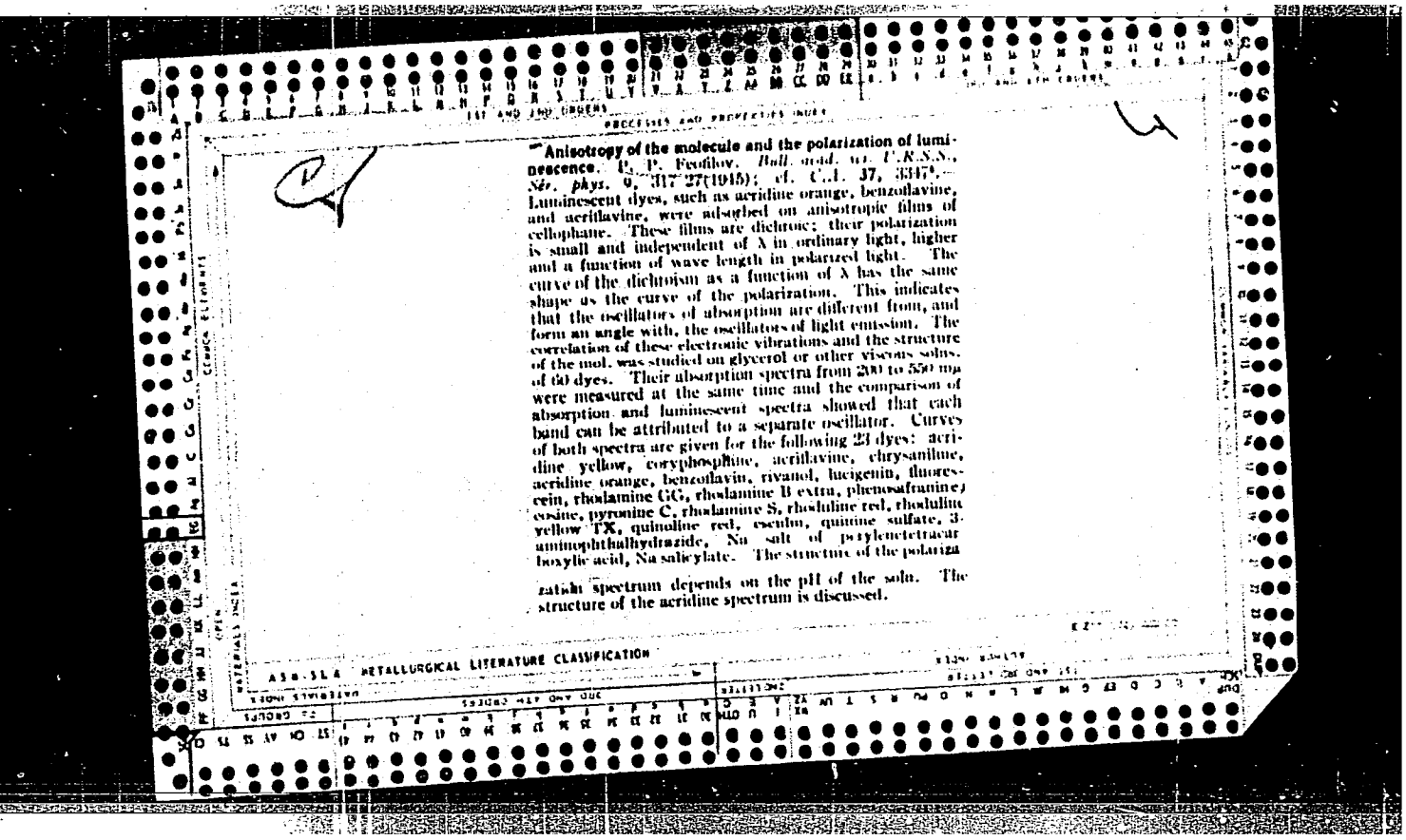
Fluorescence of organic dyes as related to chemical constitution. P. P. Feofilov. *Doklady Akad. Nauk S.S.S.R.* 45, 387-90(1944); *Compt. rend. acad. sci. U.R.S.S.* 45, 367-70(1944)(in English).—Strong fluorescence may be imparted to nonfluorescent triphenylmethane (TPM) dyes either (1) by formation of a chem. bridge between 2 of the benzene rings, i.e., by conversion to acridine, xanthene, or similar dyes, or (2) by incorporating the TPM dyes in rigid solns., e.g., sugar, plastics, boric acid, or (3) by fixation on certain adsorbents. These methods of imparting fluorescence are effective with all dyes, e.g., auramine, diphenylmethane, TPM, cyanine, pineverdol, dicyanine, whose structure permits relative rotation of two large parts of the mol. about a chain of conjugated double bonds responsible for the color of the dye. It is suggested that the above-mentioned methods for imparting fluorescence are effective because they prevent aromatic groups in the dye mol. from undergoing an angular shift in position about the ethylene double bond in the *excited* state. Suppression of such rotation in effect seals energy within the mol. and thus makes the energy available for emission as fluorescent light. J. W. Perry

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SEICHENKO, A. M. : FEOFILOV, P. P.

Luminescent materials accepted in a military sense.

An article found in "Optics for Military Use", Part I, published by the USSR Academy of Science, Moscow, 1945.



Anisotropy of the molecule and the polarization of luminescence. P. P. Feofilov. *Bull. acad. sci. U.R.S.S., Sér. phys.* 9, 317-27(1945); cf. *C.A.* 37, 3347⁹.—Luminescent dyes, such as acridine orange, benzoflavine, and acriflavine, were adsorbed on anisotropic films of cellophane. These films are dichroic; their polarization is small and independent of λ in ordinary light, higher and a function of wave length in polarized light. The curve of the dichroism as a function of λ has the same shape as the curve of the polarization. This indicates that the oscillators of absorption are different from, and form an angle with, the oscillators of light emission. The correlation of these electronic vibrations and the structure of the mol. was studied on glycerol or other viscous solns. of 60 dyes. Their absorption spectra from 380 to 550 mμ were measured at the same time and the comparison of absorption and luminescent spectra showed that each band can be attributed to a separate oscillator. Curves of both spectra are given for the following 23 dyes: acridine yellow, coryphosphine, acriflavine, chrysaniline, acridine orange, benzoflavin, rivanol, lucigenin, fluorescein, rhodamine 6G, rhodamine B extra, phenosafranine, eosine, pyronine C, rhodamine S, rhodoline red, rhodoline yellow TX, quinoline red, esculin, quinine sulfate, 3-aminophthalhydrazide, Na salt of perylenetetracarboxylic acid, Na salicylate. The structure of the polarization spectrum depends on the pH of the soln. The structure of the acridine spectrum is discussed.

FEOFILOV, P.P.

USSR/Physics Feb 1947
Luminescence
Light - Polarization

"Nature of Elementary Emitters and the Polarization of Photoluminescence," P. P. Feofilov, Lab Luminescence, State Opt Inst, 4 pp

PA 50T98

"Comp Rend Acad Sci URSS" Vol LV, No 5

Vavilov has shown that the kind of multipolarity of elementary absorbing and emitting systems in the case of complicated luminescent molecules can be established by studying absorption and emission as function of the direction of the exciting light vector, and by

50T98

USSR/Physics (Contd) Feb 1947

observation. He has computed polarization diagrams for the four possible combinations of electric dipoles and quadrupoles and made it clear that the study of polarization diagrams permits definite decisions on the kind of multipolarity of elementary emitters. Feofilov extends Vavilov's considerations to the case of a magnetic dipole. Submitted by S. I. Vavilov, 19 Oct 1946.

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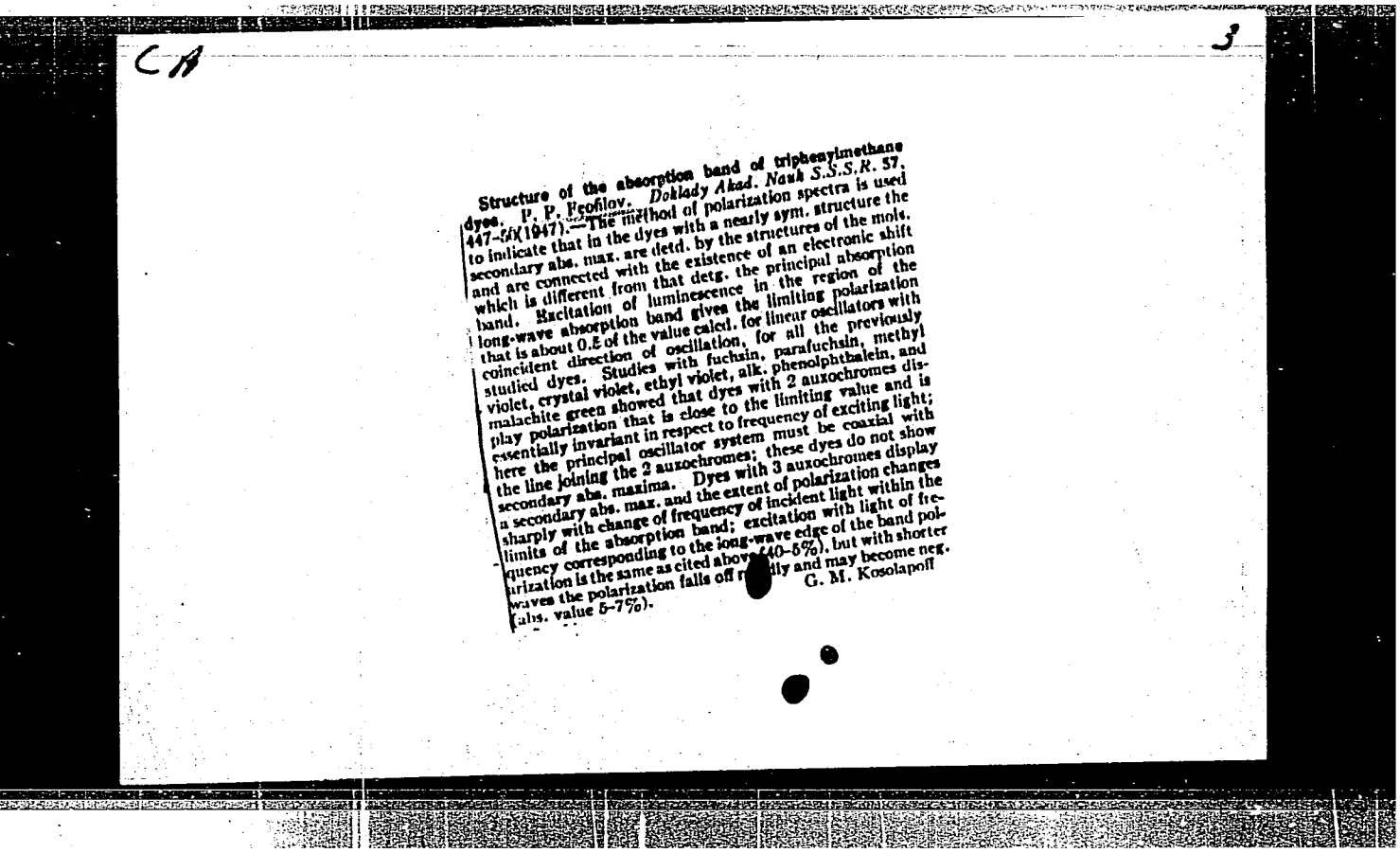


CA

3

Structure of the absorption band of triphenylmethane dyes. P. P. Feofilov. *Doklady Akad. Nauk S.S.S.R.* 57, 447–50(1947).—The method of polarization spectra is used to indicate that in the dyes with a nearly sym. structure the secondary abs. max. are detd. by the structures of the mols. and are connected with the existence of an electronic shift which is different from that detg. the principal absorption band. Excitation of luminescence in the region of the long-wave absorption band gives the limiting polarization that is about 0.5 of the value calcd. for linear oscillators with coincident direction of oscillation, for all the previously studied dyes. Studies with fuchsin, parafuchsin, methyl violet, crystal violet, ethyl violet, alk. phenolphthalein, and malachite green showed that dyes with 2 auxochromes display polarization that is close to the limiting value and is essentially invariant in respect to frequency of exciting light; here the principal oscillator system must be coaxial with the line joining the 2 auxochromes; these dyes do not show secondary abs. maxima. Dyes with 3 auxochromes display a secondary abs. max. and the extent of polarization changes sharply with change of frequency of incident light within the limits of the absorption band; excitation with light of frequency corresponding to the long-wave edge of the band polarization is the same as cited above (40–5%), but with shorter waves the polarization falls off r[illegible]dly and may become neg. (abs. value 5–7%).

G. M. Kosolapoff

PA 53T91

FEOFILOV, P. P.

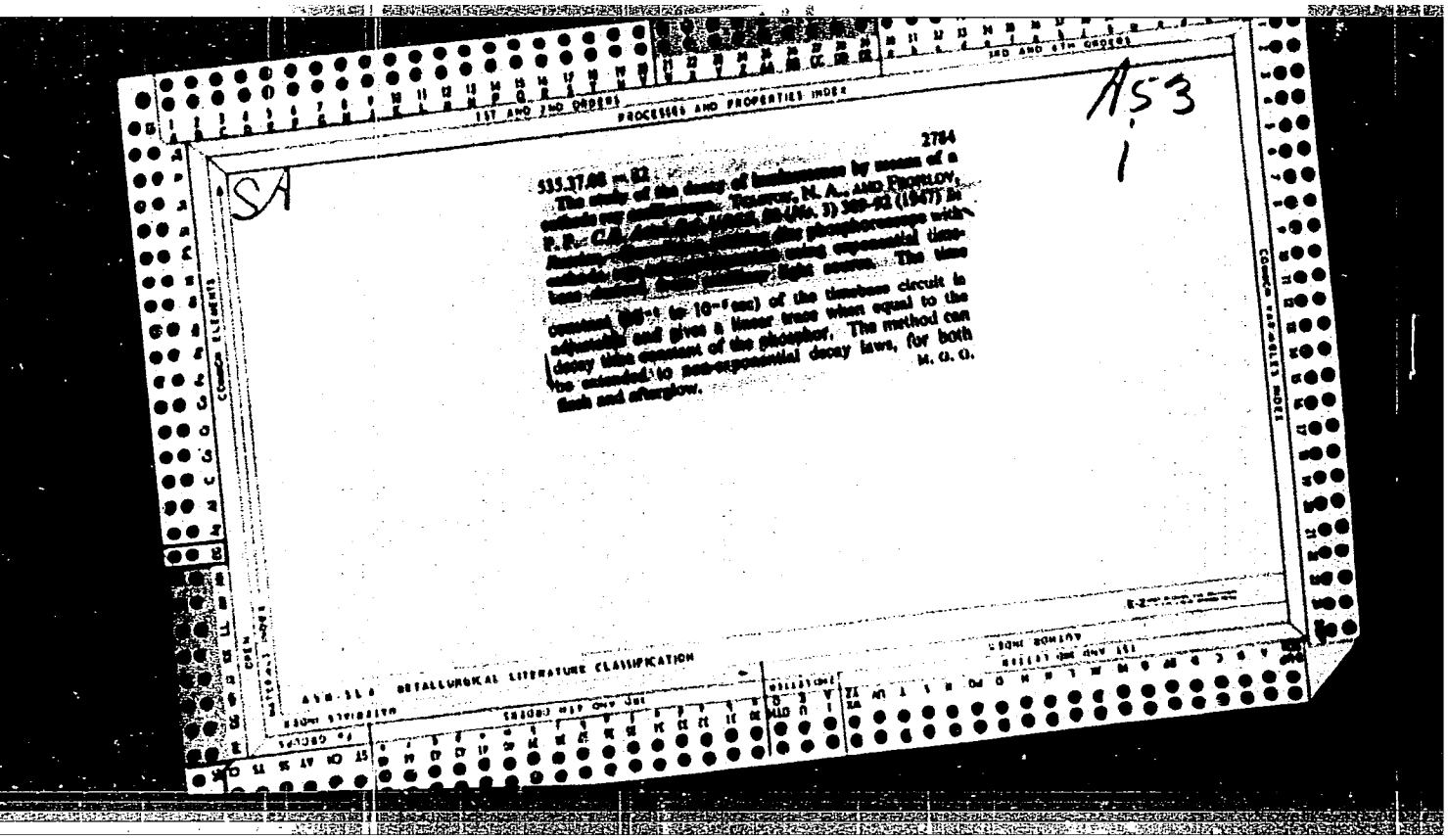
USSR/Physics Aug 1947
Luminescent Materials
Polarization

"Polarization of Photoluminescence and the Symmetry of the Molecule," P. P. Feofilov, Luminescence Lab, State Optical Inst, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 4

Presents in tabular form polarization of luminescence of benzole derivatives, important because of increased use of organic dyes. Analysis of molecule structure of fluorescent dyes shows that majority of complex molecules can be isolated and divided in several ways. Submitted by Academician S. I. Vavilov, 30 Mar 1947.

53T91



FEOFILOV, P. P.

Apr 48

USSR/Physics
Light - Measurements
Optics, Physical

"One Possibility of an Equation of Depth of Modulation in the Kerr Effect," N. A. Tolstoy, P. P. Feofilov, State Opt Inst, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LX, No 2

Describes fundamentals of method for measuring Kerr effect. Presents method for calculating intensity of light passing through the analyzer. Submitted by Academician S. I. Vavilov, 18 Feb 1948.

PA 62T97

FEOFILOV, P. P.

USSR/ Physics
Luminescence
Glass

11 Jan 1948

"Loss of Luminescence by Glass and Uranyl Salts" N. A. Tolstoy, P. P. Feofilov, Luminescence Lab, State Opt Inst, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 2

Presents some results of use of new method to study attenuation of luminescence. Gist of method is development of curve of intensity of luminescence according to the exponential law in time on screen of cathode oscillograph. By varying the exponent of the converter, straight line produced on the screen, indicating identical nature of the law of attenuation of studied luminescence with the law of the converter. Submitted by Academician S. I. Vavilov, 9 Nov 1947.

PA 43/43T101

FEOFILOV, P. P.

PA 48/49T98

USSR/Physics
Luminescence
Polarization

Dec 48

"Polarized Luminiscence," P. P. Feofilov, 40 pp

"Uspekhi Fiz Nauk" Vol XXXVI, No 4

Treats under: (1) Polarized luminescence as a result of anisotropy of the molecule, (2) observations on and measurements of polarized luminescence, (3) rotating depolarization and some problems of the theory of the liquid state, (4) concentrated depolarization and intramolecular exchange of energy of excitation, and (5) polarization of luminescence and structure of the molecule. Under (5), author discusses: (a) nature of elementary radiations and polarization diagrams, (b) polarized spectra and relative disposition of molecular oscillators, and (c) boundry polarization of luminescence and symmetry of the molecule.

48/49T98

USSR/Physics (Contd) Dec 48

48/49T98

FEOFILOV, P. PA 48/49T93

USSR/Physics Dec 48
Academy of Sciences
Luminescence

"Second All-Union Conference on Luminescence," P. Feofilov, 10 pp

"Uspekhi Fiz Nauk" Vol XXXVI, No 4

Session convened 17 - 22 May in Moscow. Discussed various problems of luminescence and illumination engineering. Vavilov summarized development of this science. Terenin reported on "Quenching of Photoluminescence and Metastable States." Feofilova discussed polarized luminescence and structure of the molecule. Vavilov

48/49T93

also submitted a report on experimental observation of migrations of the exciting energy in fluorescent solutions.

48/49T93

ANDRONNIKOV, K.S.; BALAKOV, V.V.; BUZHINSKIY, A.N.; BURAGO, A.N.; VENTMAN, L.A.; VISHNEVSKIY, A.A.; VOLOSOV, D.S.; GASSOVSKIY, L.N., professor; GERSHUN, A.A., professor; YEL'YASHEVICH, M.A.; YEVSTROP'YEV, K.S.; GUREVICH, M.M., professor; KOLYADIN, A.I.; KORYAKIN, B.M.; KURITSKIY, A.L.; PAPIYANTS, K.A.; PROKOF'YEV, V.K., professor; PUTSEYKO, Ye.K.; REZUNOV, M.A.; RITYN', N.E., SAVOST'YANOVA, M.V., professor; SEVCHENKO, A.N.; SENNOV, N.I.; STOZHAROV, A.I.; FAYERMAN, G.P., professor; FEOFILOV, P.P.; TSAREVSKIY, Ye.N., professor; CHEKHMATAYEV, D.P.; YUDIN, Ye.F.; KAVRAYSKIY, V.V., professor; VAVILOV, S.I., akademik, redaktor

[Optics in military science] Optika v voennom dele; sbornik statei. Pod red. S.I.Vavilova i M.V.Savost'ianovoi. Izd. 3-e, zanovo perer. i dop. Moskva. Vol.2. 1948. 387 p. (MLRA 9:9)

1. Akademiya nauk SSSR. 2. Sostaviteli - sotrudniki Gosudarstvennogo Opticheskogo instituta (for all except Vavilov and Kavrayskiy) 3. Voyenno-morskaya akademiya (for Kavrayskiy)
(Optics)

FEOFILOV, P. P.

PA 36/49193

USSR/Physics Jan/Feb 49
Luminescence
Molecular Structures

"Luminescence Polarization and Molecular Structure," P. P. Feofilov, State Opt Inst, 10 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XIII, No 1

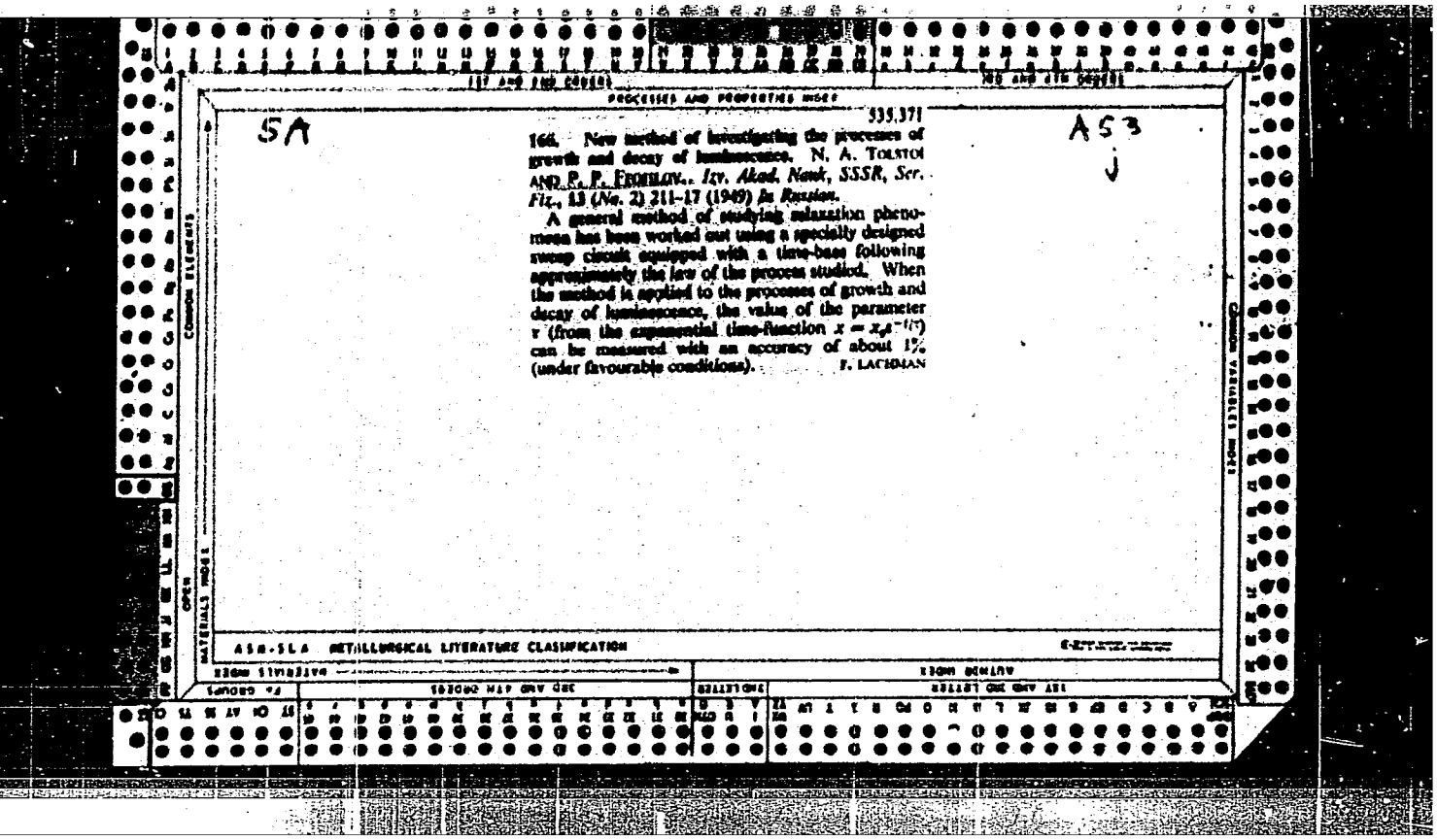
Approached study of molecular structure by investigating luminescence polarization, in particular, by: (1) polarization diagrams indicating spatial distribution of luminescence polarization, (2) polarization spectra, i.e., curves of observed polarization versus wave

36/49193

USSR/Physics (Contd) Jan/Feb 49

length of exciting light, and (3) boundary values for degree of polarization, i.e., values observed when all known depolarizing factors were eliminated.

36/49193



5A

A53

535,371

166. New method of investigating the processes of growth and decay of luminescence. N. A. TOLSTOI AND P. P. FEOFILOV.. *Izv. Akad. Nauk, SSSR, Ser. Fiz.*, **13** (*No.* 2) 211–17 (1949) *In Russian.*

A general method of studying relaxation phenomena has been worked out using a specially designed sweep circuit equipped with a time-base following approximately the law of the process studied. When the method is applied to the processes of growth and decay of luminescence, the value of the parameter τ (from the exponential time-function $x = x_0 e^{-t/\tau}$) can be measured with an accuracy of about 1% (under favourable conditions). F. LACHMAN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FEOFILOV, P. P.

USSR/Physics May 49
Relaxation Phenomenon
Oscillographs

"New Method of Studying Processes," N. A. Tolstoy, P. P. Feofilov, State Optical Inst, 10 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 5

Describes new oscillographic method of studying relaxation of physical processes, based on the use of nonlinear graphing. Method is applicable to processes occuring in the time interval 10^{-6} - 10^{-1} sec. In the case of relaxation taking place according to the exponential law (exp- t/tau), value of tau may be determined after several seconds. Generalization of method, called "the method of partial time," is applicable to processes in which relaxation occurs according to any law. Submitted 6 Nov 48.

PA 46/49T99

FEOFILOV, P. P.

USSR/Physics - Dielectric Constants Dec 49
Polarization, Relaxation

"Application of the New Method for Studying Relaxation Processes to a Study of Relaxation Polarization in Dielectrics," G. I. Skanavi, N. A. Tolstoy, P. P. Feofilov, K. I. Lebedev, Phys Inst imeni Lebedev, Acad Sci USSR, 9 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 12

To study relaxation polarization in dielectrics of titanium dioxide with small additions of oxides of metals belonging to the second group of the periodic table (this group gives very high values of e in the region of low frequencies), one employs the oscillographic method of studying, by electrical square-wave impulses through ohmic resistances, the charge and discharge of the condensers containing the dielectric under study. Here a simple exponential development of the process in time is employed, as well as more complicated ones. Shows charge and discharge processes of the condenser with the dielectric under study have a complex character differing from the exponential. Equivalent circuit schemes are found for the dielectrics under study. Parameters of these schemes are determined experimentally. Calculation of these equivalent schemes permits one to obtain the function of current drop with time in each studied dielectric with calculated constants and thus to evaluate values of initial currents. Submitted 23 Jun 49

PA 152T87

FEOFILOV, P. P.

USSR/Physics
Phosphors
Luminescence

Jan 49

"A Study of the Initial Stages of Luminescence and Extinguishing in Zinc-Sulfide Phosphors With the Aid of an Oscillographic Phosphoroscope," V. A. Arkhangel'skaya, A. M. Bonch-Bruyevich, N. A. Tolstoy, P. P. Feofilov, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 2

Partial results obtained during study of crystallic phosphors by the "partial time" method. Method allows studies to be conducted in the time interval 10-5-10-1 seconds, suitable for investigating the little-studied initial stages of extinguishing, and the completely unstudied stages of crystallic phosphors bursting into luminescence. Submitted 5 Nov 48.

PA 25/49T99

FEOFILOV, P. P.

USSR/Physics Jun 49
Optics
Colloids

"Certain Electro-Optical Phenomena in Colloids," N. A. Tolstoy, P. P. Feofilov, State Opt Inst, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 4

Studied electrical double refraction and electrical dichromism of colloids using (1) optical arrangement with a Kerr cell, (2) voltage sources, changing according to a special law, (3) obdurator, and (4) photoelement, amplifier, and cathode oscilloscope. Tested water solutions of bentonite, benzopurpurin, graphite, anisaldazin, n-azoxyanisole, and other liquid crystals. Submitted by S. I. Vavilov, 25 Mar 49.

PA 46/49T89

FEOFILOV, P. P. PA 52/49T105

USSR/Physics
Photoconductivity
Bismuth Compounds May 49

"Initial Stages of Relaxation in the Photoconductivity of Bi_2S_3," D.B. Gurevich, N. A. Tolstoy, P. P. Feofilov, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 3. Submitted by Acad S. I. Vavilov, 25 Mar 49.

Some particularities of the flare-up of ZnS.Mn phosphors. N. A. Tolstoĭ and P. P. Feofilov. *Doklady Akad. Nauk S.S.S.R.* 68, 285-8 (1949).—In excitation by a Hg vapor lamp, the blue (Zn) band of the ZnS.Mn phosphor shows, in oscillographic phosphoroscopy, normal growth of intensity, but the yellow (Mn) band first flares up to a peak, from which it rapidly falls to the stationary intensity. In samples heated 15 min. at 900°, under a NaCl flux, with $1 \times 10^{-3} - 1 \times 10^{-2}$ g. Mn/g., the peak was most pronounced at 1×10^{-3} g./g., and was still observable with 5×10^{-3} and 5×10^{-4} g./g. The effect is thus most marked at activator concns. at which the competition between the blue and the yellow emission is most pronounced. The height of the peak (relative to the stationary intensity) increases with the intensity of excitation, and with the length t_0 of the (equal) periods of illumination and darkness (between 0.01 and 0.4 sec.). On cooling to liquid-air temp., the effect disappears in samples in which it was present at room temp., whereas samples with too high or too low Mn contents show no new particularities. On heating to above room temp., the relative height of the peak first increases, then falls, along with a general increase of the stationary brightness, with a distinct min. appearing between the peak and the level branch. Further increase of the temp. brings the curve back to normal, without peak or min. The peak phenomenon is thus confined to a range close to room temp. By exponential spreading, the max. of the peak is found to be attained within a few millisec. from the beginning of the excitation; this time is practically independent of t_0, and decreases with increasing intensity of excitation. The peak can be made visually observable with the aid of a rotating disk coated with the phosphor on its periphery; the brightness of the excited luminescent spot, if viewed through a red filter, first increases, then decreases with increasing speed of rotation, whereas the contrary appears through a blue filter. The decay of the yellow emission also presents peculiarities. It is very fast in the beginning of the dark period, then is slowed down almost to a standstill, then proceeds at the normal rate. This effect is most pronounced with 5×10^{-3} g. Mn/g., and is absent altogether above 5×10^{-3} or below 1×10^{-4} g./g. Again the blue emission decays normally throughout. The phenomenon of the flare-up can be interpreted in agreement with the representations of Levshin (*C.A.* **42**, 2266c), by assuming that at the end of a dark period of sufficient length t_0, the levels of Mn have become empty, as a consequence of which electron transitions to these levels are uninhibited in the 1st stages of excitation, but become stationary as soon as the levels have become "plugged" with electrons. This mechanism accounts satisfactorily for all the effects observed, except for the disappearance of the flare-up at too low Mn concns., and for the min. observed at moderately high temps.

N. Thon

FEOFILOV P. P.

Relaxation of the photoconductivity in semiconductors. D. B. Gurevich, N. A. Tolstoi, and P. P. Feofilov. Zhur. Eksptl. Teoret. Fiz. 20, 769-82 (1950).— The kinetics of the photocond. $\Delta\sigma$ were investigated by oscillography, in illumination with rectangular light impulses (mostly of a period ~0.04 sec.), with rectangular voltage impulses of a frequency very considerably greater than that of the light impulses, and with exponential sweep of the oscillograph screen. The exptl. relaxation curves are represented in the coordinates $\theta = \Delta\sigma/(d\Delta\sigma/dt) = dt/d(\ln\Delta\sigma)$ vs. time t; the magnitude θ signifies an "instantaneous relaxation time," i.e. the relaxation time τ of the exponential $e^{-t/\tau}$ which approximates the exptl. curve at any point corresponding to the moment t. In other words, θ expresses at any given moment the "sp. slowness" of the relaxation, i.e. the reciprocal of the rate of fall of σ relative to the distance from equil. For simple exponential processes, θ coincides with the relaxation time τ, i.e. exponential processes are characterized by a const. θ. The rate law of the relaxation can be deduced from the shape of the $\theta(t)$ plots. (1) For Bi_2S_3 (thin layer on glass), θ is a linear function of t at any temp. between 189 and 326°K., i.e., $\theta = A + Bt$, or, with $A = 1/a\alpha$, $B = 1/\alpha$, and after integration, $\Delta\sigma = \Delta\sigma_0/(1 + at)^{\alpha}$, where $\Delta\sigma_0$ = initial photocond. This hyperbolic law of the decrease of $\Delta\sigma$ is analogous to the Becquerel law in phosphorescence. Between 189 and 326°K., α varies from 0.039 to 0.23, following $\alpha = \alpha_0 e^{u/kT}$, with $u = 6.2 \times 10^{-3}$ e.v., and α_0 (dimensionless) = 1.23×10^{-3}. The parameter a is roughly independent of the temp. and is = 1200 $sec.^{-1}$ at max. illumination E. The plot of the stationary $\ln\Delta\sigma_0$ vs. $\ln E$ is linear. At const. temp., a is approx. proportional to $E^{1/\beta}$, with β = 3-4, and the variation of $\Delta\sigma$ with E obeys approx. the same law. This gives the simple relation $\alpha = \alpha E^{-\beta} + P\Delta\sigma$. The growth of $\Delta\sigma$ during illumination follows a complex nonexponential law; its

temps. the growth of $\Delta\sigma$ is exponential. The exponent α in the decay law increases with temp., particularly rapidly between ~150 and ~ 200°; $a - a_0 = k_3 E^{1/2}$, with k_4 falling with rising temp. In the growth law $\Delta\sigma = \Delta\sigma_0 (1 - e^{-t/\tau})$, $1/\tau = k_4 E^{1/2}$, with k_4 falling with rising temp. With further rising temp., the growth curve deviates increasingly from the exponential. The values of a and $1/\tau$ are of the same order of magnitude. Above 200°C., both the growth and the decay are exponential, with τ independent of E but varying with the temp. according to $\tau \sim e^{-u/KT}$, with u = 0.45 e.v. (7) Photoconductors can be divided into 2 categories; (I) "exponential" photoconductors, characterized by a stationary $\Delta\sigma_0 \sim E$, a dark cond. roughly 10-100 times the photocond., exponential growth and exponential decay of $\Delta\sigma$ with the same τ in both instances, and independent of E; the temp. variation of $1/\tau$ is analogous to the temp. variation of the dark cond., and of the form $e^{-u/kT}$ in both instances; examples of this category are Cu_2O, and CdS at higher temps. (II) "Hyperbolic" photoconductors, characterized by $\Delta\sigma_0 \sim E^{1/\tau}$, a relatively low dark cond., a decay following $\Delta\sigma = \Delta\sigma_0 / (1 + at)^{\alpha}$, with α independent of E, and $a \sim E^{1/2}$; the growth can be exponential, in which case $1/\tau \sim E^{1/\tau}$. Examples are Bi_2S_3, Tl_2S, Se, InSe, and CdS at low temps. Possible deviations of certain properties (except the hyperbolic decay) from this simple scheme are viewed as complications only.

N. Thon

FEOFILOV, P. P.

USSR/Physics - Phosphors Photoconductivity Nov 50

"Comparison of Photoconductivity Relaxation," D. B. Gurevich, N. A. Tolstoy, P. P. Feofilov

"Zhur Eksper i Teoret Fiz" Vol XX, No 11, pp 1039-1046

Compares experimental laws governing kinetics of photoconductivity with experimental laws governing kinetics of luminescence. Establishes parallelism of these laws.

Calculates luminescence relaxation of cadmium sulfide from its photoconductivity relaxation. Submitted 4 Apr 50.

PA 169T107

C A

New method of investigation of relaxation processes and its application to the study of some physical processes. N. A. Tolstoi and P. P. Feofilov. *Uspekhi Fiz. Nauk* 41, 44–107(1950).—Review, particularly of the authors' own work on rectilinear oscillography of the decay of phosphorescence, photocond., etc. 33 references. N. Thon

FEOFILOV, P. P.

1 Mar 50

USSR/Physics - Luminescence
Conductivity, Photo-

"Luminescence and Photoconductivity of Cadmium Sulfide," D. V. Gurevich, N. A. Tolstoy, P. P. Feofilov

"Dok Ak Nauk SSSR" Vol LXXI, No 1, pp 29-32

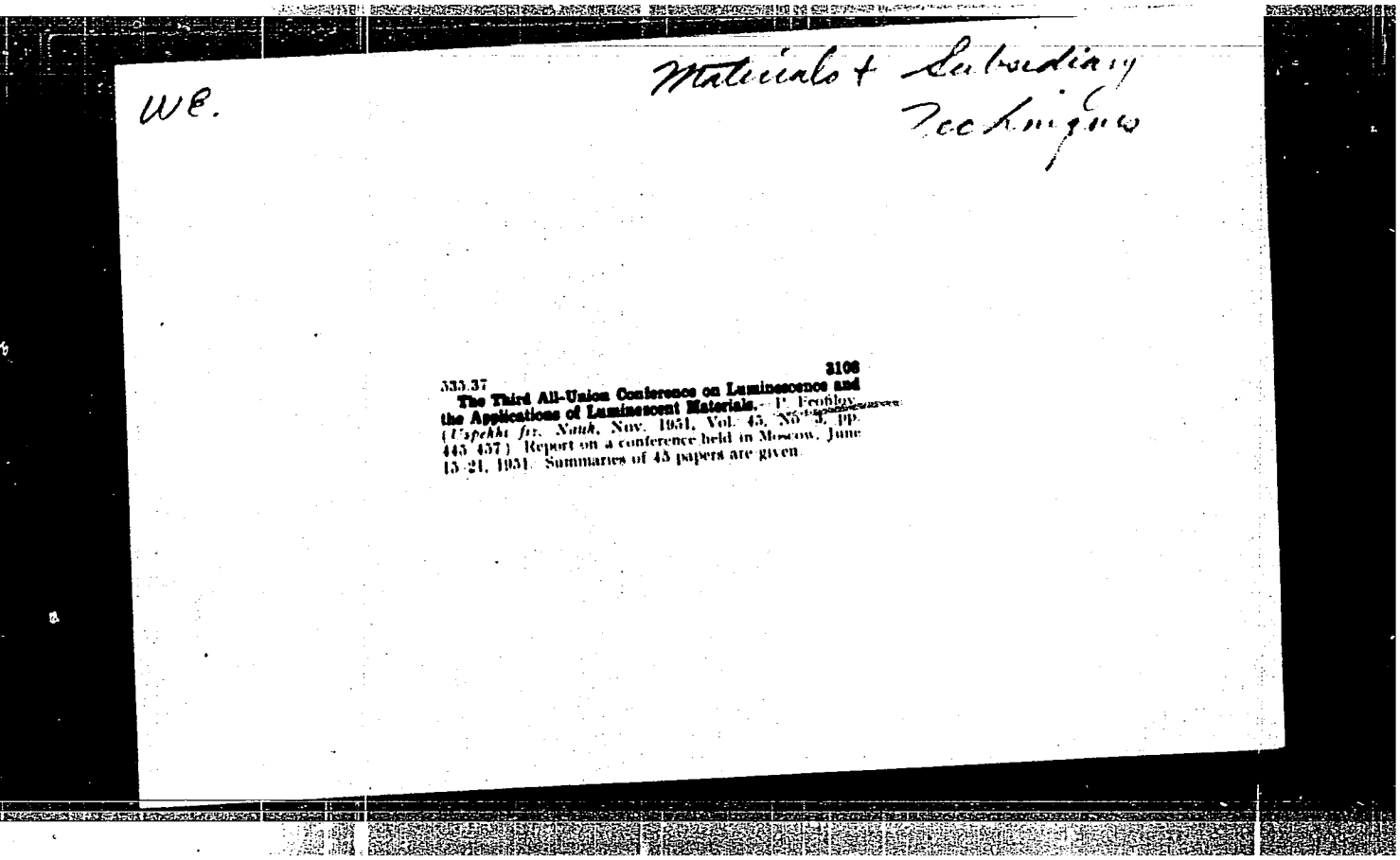
Investigated kinetics of luminescence and photoconductivity, carried out by method of "taumeter" (tau— life span or duration) on CdS monocrystals. Mathematically discusses phosphorescence relaxation and so-called "nonlinear" photoconductivity. Taumeter was described in ZhETF 19, 421, 1949, and "Iz Ak Nauk SSSR, Ser Fiz," 13, 211, 1949, by Tolstoy et al. Submitted 3 Jan 50 by Acad S. I. Vavilov.

PA 165T75

FEOFILOV, P. P.

A. N. Terenin, acad., and P. P. Feofilov. The greatest Soviet scientist-optician. (refers to S. I. Vavilov) P. 111

SO: Vestnik, Messenger of the Acad. of Sci., USSR. 21, 3, (1951).



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Materials & Luminescing Technique

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The Third All-Union Conference on Luminescence and the Applications of Luminescent Materials. – P. Feofilov. (*Uspekhi fiz. Nauk*, Nov. 1951, Vol. 45, No. 3, pp. 445–457.) Report on a conference held in Moscow, June 15–21, 1951. Summaries of 45 papers are given.

FEOFILOV, P. P.

USSR/Physics - Semiconductors Jan/Feb 52

"Kinetics of Photoconductivity and Kinetics of Phosphorescence," N. A. Tolstoy, P. P. Feofilov

"Iz Ak Nauk SSSR, Ser Fiz" Vol XVI, No 1, pp 59-69

Separates relaxation of photocond into 2 basic types: hyperbolic and exponential. Considers non-linear photoresistance with relatively low dark-current cond, characterized by bimol recombination mechanism, as belonging to the hyperbolic type; while linear photoresistance with high dark-current cond belongs to the exponential type.

218T87

1. FEOFILOV, P. P.

2. SSSR (600)

4. Vavilov, Sergei Ivanovich, 1891-1951

7. New developments in the theory of light ("Microstructure of light.")
S. I. Vavilov. Reviewed by P. P. Feofilov.
Usp. fiz. nauk 46 No. 1, 1952

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

FEOFILOV, P. P.

PA 236T76

USSR/Physics - Optics, Book Review Sep 52

"New Paths in the Development of Theory of Light (Review of S. I. Vavilov's book, 'Microstructure of Light')," P. P. Feofilov

"Uspekhi Fiz Nauk" Vol 48, No 1, pp 3-24

Praises Vavilov's work, describing visual observations of quantum fluctuations of light, principles of superposition and "nonlinearity" in optics, microoptical analysis of interference, Vavilov-Cherenkov effect, microoptics of absorbing media, inductive resonance, and migration of energy. Expects book to be a perfect manual for future generations.

236T76

USSR/Physics - Luminescence Extinction 21 Jul 52

"Problem of Extinction of Luminescence of Rubin (Al_2O_3.Cr)," N. A. Tolstoy, P. P. Feofilov

"Dok Ak Nauk SSSR" Vol 85, No 3, pp 551-554

Presents certain data on concn, temp, and spectral dependences of curves of extinction (and lighting) of luminescence of synthetic ruby, from which it follows that the mechanism governing luminescence in rubies is rather complex. Submitted by Acad A. N. Terenin 26 May 52.

235T93

PA 240T97

FEOFILOV, P. P.

USSR/Physics - Luminiscence 21 Dec 52

"Absorption and Luminiscence Spectra of Triphenylmethane Dyes," P. P. Feofilov and I. G. Fayerman

"DAN SSSR" Vol 87, No 6, pp 931-934

Compare absorption and emission spectra of triphenylmethane dyes in order to verify that luminescence spectra should be narrower than absorption band. Results are tabulated. Besides fluorescence, the dyes emit for a few seconds a greenish afterglow in a wave-length shorter than the exciting light. Presented by A. N. Terenin. Received 21 Oct 52.

240T97

PA 254T61

FEOFILOV, P. P.

USSR/Electronics - Radio Location, History Jan 53

"Unknown Work by S. I. Vavilov on Locating Hidden Radios," P. P. Feofilov and I. A. Shlyakhter

Usp Fiz Nauk, Vol 49, No 1, pp 147-154

Describes an unpublished work by S. I. Vavilov concerning the location of enemy radio transmitters during World War I.

254T61

PP PEOFILOV

Kinetics of luminescence of silver halide salts

Arkhangel'skaya and

Agl as single crystals

tained by depo from

sion layers and layers

iquid air temp. The

Agl

for all samples

cence were found, indicating

duration of less than a microsecond.

to be unsymmetrical,

the intensity of the

air temp were approximately

is the luminescence intensity at time

intensity, a is a const., and a is a parameter equal

one case. As the temp increased, rise and

were accelerated with a simultaneous decrease

increase in a. The latter indicated a

ponential process. The

are more complicated, consisting of

a time const. of 1-10 microsec and a slower process with a

time const. of about 0.1 millisec. The

Ag halide salts were typical crystal phosphors

FEOFILOV, P.P.

4

Polarization of the luminescence of *F*-centers in crystals of alkali halides. P. P. Feofilov. *Doklady Akad. Nauk S.S.S.R.* 92, 743-6(1953)(Engl. translation issued as *U.S. Atomic Energy Comm.* NSF-tr-208, 4 pp.(1954)); cf. *C.A.* 48, 7430b.—The study was made with large LiF and NaF single crystals. The crystals were colored by x-irradiation. The absorption spectrum of NaF presented peaks at about 340 and 510 mμ. The absorption spectrum of LiF was almost identical with that reported by Klick (*C.A.* 45, 10059c). The red-orange luminescence of NaF was excited with a spectrum practically unchanged over the entire region of spectral absorption of the crystal and was quite intense with excitation in both absorption bands. Excitation of x-rayed LiF by 430-mμ light yielded a bright orange luminescence, while excitation by 365-mμ light resulted in bright green luminescence. Duration of luminescence was much less than 10 microsec. The luminescence of x-rayed LiF and NaF single crystals excited by linearly polarized light was partially polarized. For NaF, the polarization changed sign with transition of excitation from the vicinity of the long-wave absorption band to the short-wave band. Because the emission spectrum was almost unchanged, it was concluded that in NaF both bands must be ascribed to centers of the same type. It was assumed that the long-wave oscillators were distributed along the 6 C_2 axes which pass through the centers of the opposite edges of the elementary cube. The circular oscillators describing the short-wave absorption were arranged in the (110) planes of the rhombododecahedron. Calcns. were made which resulted in excellent agreement for the azimuthal dependence of the degree of polarization. The abs. values calcd. differ somewhat from exptl. values because the anisotropy of the oscillators was not complete. Spontaneous polarization under excitation by natural light was observed in plates cut parallel to the (110) plane. Calcns. were in full agreement with the exptl. data. H. L., Jr.

10/18/54

FEOFILOV, P. P.

USSR/Physics - F-Centers Crystals 21 Sep 53

"Photochemical Conversion of F-Centers in KCl Crystals at High Temperatures," A.A. Khatalov, Kiev State Univ in Shevchenko.

DAN SSSR, Vol 92, no 3, pp 549-552

Studies effect of light at high temps on absorption of KCl crystals containing F-centers. Used method of S.A. Artsybashev (Trudy Fiz Inst Lebedev, Vol 2, No 3 (1938). Plots the variation of X-band, obtained at const irradiation of crystal and decaying after discontinuance of irradiation. Considers X-centers as a primary formation of colloidal coagulation of several or, most probable, 2 F-centers. Presented by Academician A.N. Terenin 21 Jul 53.

268T95

FEOFILOV, P. P.

USSR/Physics - Luminiscence, 21 Sep 53
F-Centers

"Polarized Luminiscence of F-Centers in CaF_2," P.P. Feofilov

DAN SSSR, Vol 92, No 3, pp 545-548

Revealed intensive red luminiscence of CaF_2 crystals, dyed by additive or subtractive method. This luminiscent excitation spectrum coincides with the absorption spectrum of F-centers and therefore may be ascribed to F-centers. The latter may be interpreted as electrons localized in holes of halide ions. Presented by Acad A.N. Terenin 20 Jul 53.

268T94

USSR/Minerals - Spectral analysis

Card 1/1 Pub. 43 - 91/97

Authors : Feofilov, P. P., and Kuznetsova, L. A.

Title : Spectral luminescence method of determining the Cr content in synthetic rubies

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, page 297, Mar-Apr 1954

Abstract : A method was developed for quantitative spectral determination of chromium in natural and synthetic rubies. A study of spectral, kinetic and polarization characteristics of the luminescence of rubies with various Cr contents showed that a change in Cr concentration affect mostly the luminescence spectra. The Cr ions which are isomorphically included in the crystalline lattice of corundum (Al_2O_3), determine the red color intensity and the luminescence of natural and synthetic ruby crystals.

Institution : .....

Submitted : .....

FEOFILOV, P. P.

USSR/ Physics - Spectral analysis

Card 1/1 Pub. 43 - 27/62

Authors : Feofilov, P. P.

Title : Spatial distribution of radiation and the nature of coloration centers in ion crystals

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 688-689, Nov-Dec 1954

Abstract : It was established that the luminescence of coloration centers forming during photochemical or additive coloring of CaF_2, NaF and LiF monocrystals and excited by a linear-polarized light is partially polarized. The observed absolute values of the polarization indicate the high anisotropy of the radiation centers of the coloring matter. The relation between the degree of polarization and the relative orientation of the crystal and the exciting electrical vector, is discussed. Graph.

Institution: .....

Submitted : .....

FD 425

USSR/Physics - Color centers

Card 1/1 Pub. 147-11/16

Author : Feofilov, P. P.

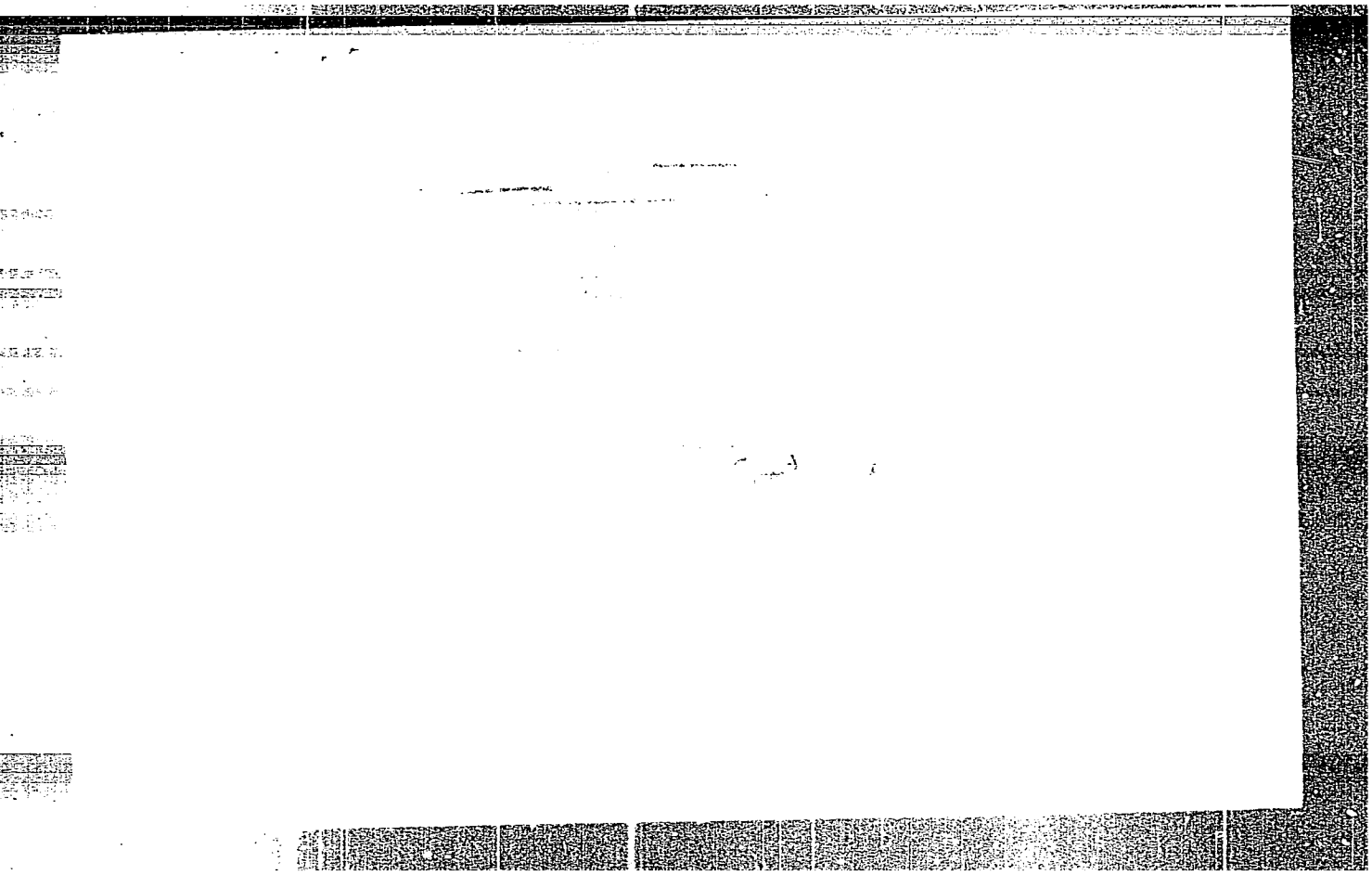
Title : Anisotropy of the radiation of color centers in crystals of cubic syngony

Periodical : Zhur. eksp. i teor. fiz. 26, 609-623, May 1954

Abstract : On the basis of a classical oscillator model the author calculates the azimuthal dependence of the degree of polarization of luminescence of the color centers in cubic crystals. Conducts the computation for the cases where the elementary oscillators are oriented along the basis of symmetry of the fourth, third, and second orders and for the excitation of luminescence in various regions of the absorption spectrum. Comparison of the computed and experimental data permits one to establish the character of the orientation of the color centers in various cases investigated and to express assumptions concerning the nature of the centers.

Institution :

Submitted : September 4, 1953



APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000412910009-5"

USSR/Physics - Crystallography

Card 1/1 Pub. 22 - 17/56

Authors : Feofilov, P.P.

Title : About orientation of the Eu^{+++} ions in the lattice of crystal CaF_2

Periodical : Dok. AN SSSR 99/5, 731-733, Dec. 11, 1954

Abstract : Results of the fluorescence-polarizing method, applied to CaF_2 crystals, for determining the orientation of Eu^{+++} ions on the crystal lattices are described. Four references: 3-USSR (1934-1954) Graph; Photodiagrams.

Institution:

Presented by: Academician A.N. Terenin, August 6, 1954

FEOFILOV P.P.

K-5

Category : USSR/Optics - Physical Optics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4963

Author : Feofilov, P.P.
Title : Experimental Determination of the Nature of the Elementary Radiators of the Eu^{3+} Ion in CaF_2.

Orig Pub : Dokl. AN SSSR, 1954, 99, No 5, 975-958

Abstract : The method of polarization luminescence diagrams, proposed by S.I. Vavilov (Zh. eksperim i teor, Fiziki, 1940, 10, 1363), for the determination of the nature (multi-polarity) of elementary radiators, is applicable to the investigation of the luminescence of Eu^{3+} in single crystals of CaF_2-Eu. Employing data obtained in an earlier work (Referat Zh. Fizika, 1956, 5304) with respect to the character of the orientation of the elementary radiators of the Eu^{3+} ion (orientations along the third-order symmetry axes) the author computed the dependence of the intensity (J) and polarization (P) of the luminescence -- excitation through the face parallel to (100), observation through the face parallel to (110) -- on the angle of ratation (η) of the electric vector exciting

Card : 1/2

Category : USSR/Optics - Physical Optics K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4963

the linearly-polarized light. A calculation carried out for four types of elementary dipole radiators (electric and magnetic linear -- π_e and π_m and circular -- σ_e and σ_m) -- shows that the investigation of the functions $J(\eta)$ and $P(\eta)$ leads to an unambiguous conclusion concerning the multipolarity of the radiators (under the assumption that the absorption of light is carried out by linear electric oscillators). In many cases there is no need for a full investigation of the functions $J(\eta)$ and $P(\eta)$, and the determination of the nature of the radiators can be reduced to a qualitative observation of the sign of P and of the character of the function $J(\eta)$. The use of this method has made it possible to ascertain, that among the most intense lines in the luminescence spectrum of the Eu^{3+} ion in CaF_2 there are lines corresponding to all four possible types of dipole radiators (π_e, π_m, σ_e, and σ_m).

Card : 2/2

FEOFILOV, P. P., Doctor of Physico-Mathematical sciences

"The Polarized Luminescence of Cubic Crystals" paper presented at the Conference on Molecular Luminescence and Luminescent Analysis, MINSK from 20 to 25 June 1955.

FEOFILOV, Petr Petrovich,

Academic degree of Doctor of Physic-Mathematical Sciences, based on his defense, 29 June 1955, in the Council of State Order of Lenin Optical Inst imeni Vavilov, of his dissertation entitled: "Polarized luminescence of atoms, molecules, and crystals."

Academic degree and/or title: Doctors of Sciences

SO: Decision of VAK, List no. 4, 25 February 1956, Byulleten' MVO SSSR, No. 1, January 1957, Moscow, pp. 14-24, Uncl. JPRS/NY-440

FD-2982

USSR/Physics - Absorption band

Card 1/1 Pub. 146 - 23/28

Author : Grechushnikov, B. N.; Feofilov, P. P.

Title : Oscillatory structure in the absorption spectrum of rubidium at minus 190° C

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 384

Abstract : S. I. Pekar (ibid., 22, 641, 1952) and M. A. Krivoglaz (co-author S. I. Pekar, Trudy Instituta fiziki AN Ukr. SSR, 4, 37, 1954) showed theoretically that the form of the absorption band for admixtures in dielectrics can be represented under definite assumptions in the form of the product of two frequency functions, the first factor representing the smooth bell-shaped curve and describing the general contour of the absorption spectrum and the second factor representing a rapidly oscillating function and describing the so called structure of the absorption band. B. N. Grechushnikov (DAN SSSR, 99, 707, 1955) investigated the absorption spectrum of rubidium at the temperature of liquid nitrogen (the earlier study of the influence of temperature was by K. Gibson, Phys. Rev., 8, 38, 1916). The present writer obtains greater detail. Five references: e.g. Krishnan, Proc. Ind. Soc., 26, A, 6, 450, 1947.

Institution : Institute of Crystallography, Academy of Sciences USSR

Submitted : May 19, 1955

FEOFILOV, P. P.

USSR/Physics - Conferences

Card 1/1 Pub. 118 - 5/8

Authors : Neporent, B. S. and Feofilov, P. P.

Title : The 9th conference on spectroscopy

Periodical : Usp. fiz. nauk 55/3, 443-452, Mar 1955.

Abstract : A description of the work conducted at the 9th conference on spectroscopy is presented. The conference took place at Tarty (Estonia) during July 5 to 11, 1954. The conference was divided into 3 separate sections: 1. molecular spectroscopy; 2. general and atomic spectroscopy; and 3. spectral analysis. Reports on molecular spectroscopy, read by many scientists, are outlined.

Institution: .....

Submitted : .....

FEOFILOV, P. P.

K-5

Category : USSR/Optics - Physical Optics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4959

Author : Feofilov, P.P.
Title : Concerning the Theory of Polarization of Resonant Radiation and Fluorescence of Atoms and Diatomic Molecules.

Orig Pub : Dokl. AN SSSR, 1955, 104, No 6, 846-849

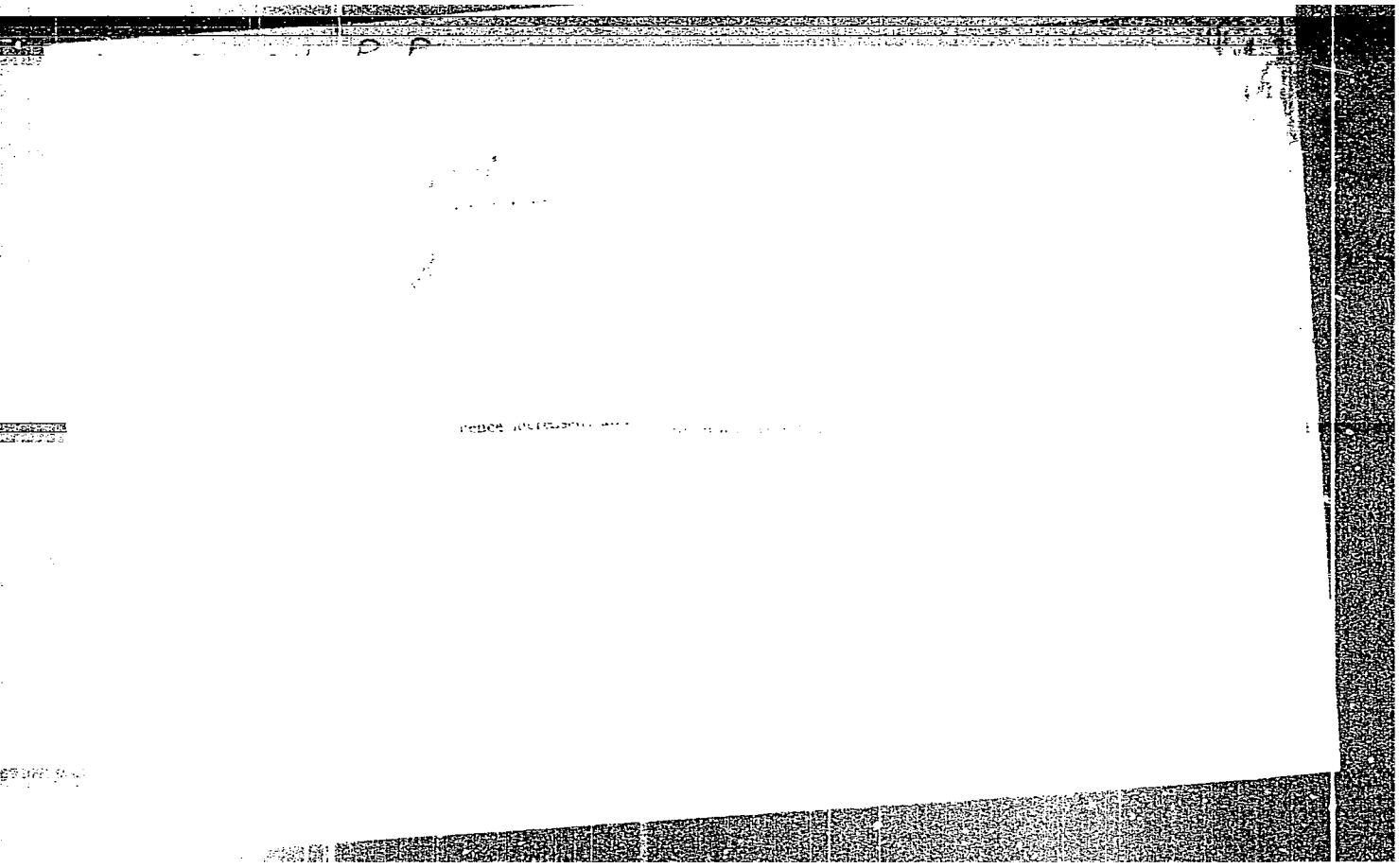
Abstract : The degree of polarization P (J) and the degree of circularity C (J) of fluorescence is calculated for plane-polarized or circularly-polarized light respectively. The population of the upper level is determined by the probability of the dipole transition $A^{J_1 M}_{J_2 M}$ in the former case and $A^{J_1 M}_{J_2 M+1}$ in the latter. The intensity of the π and σ components is determined by the same population and by the probability of the reverse transition $M \to -M$ (π) and $M \to -M \pm 1$ (σ). This yields $P(J) = \frac{I_\pi - I_\sigma}{I_\pi + I_\sigma}$ and analogously $C(J) = \frac{I_1 - I_2}{I_1 + I_2}$ where I_k is the intensity of the components with right and left-hand circular polarization. The results are given for the transitions $J_1 \to J_2 \to J_3$ (for all nine combinations, satisfying the selection rules) as functions of J_1. The equations obtained

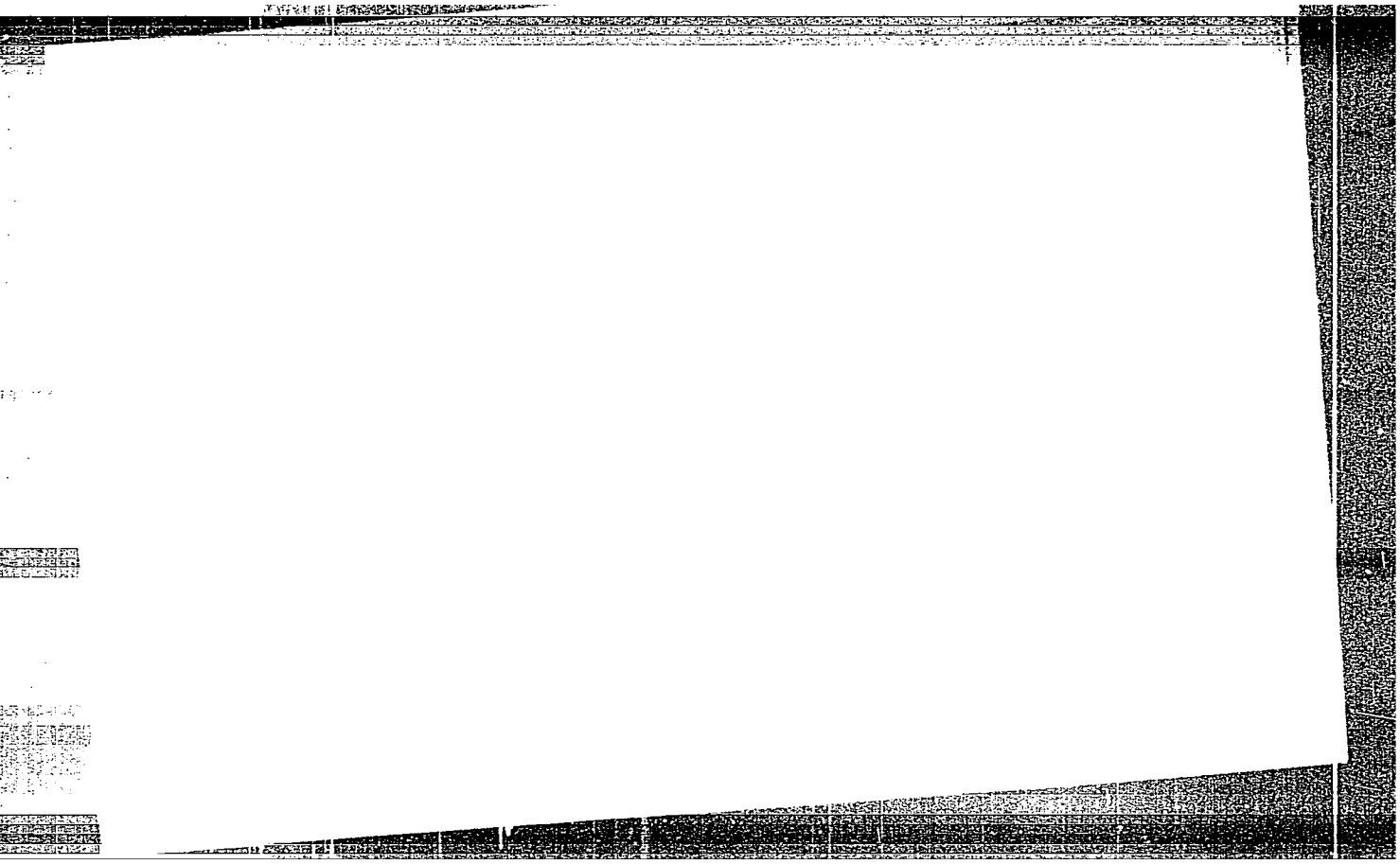
Card : 1/2

VAVILOV, S.I.; LEBEDEV, A.A., akademik; TOPCHIYEV, A.V., akademik; TERENIN, A.N., akademik; LANDSBERG, G.S., akademik; VUL, B.M.; KRAVETS, T.P. [deceased]; LEVSHIN, V.L.; FEOFILOV, P.P.; GALANIN, M.D.; KUZNETSOV, I.V.; VAVILOV, V.S.; GUROV, K.P., redaktor izdatel'stva; KISELEVA, ALAL, tekhnicheskiy redaktor

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol.4.[Experimental foundation of the theory of relativity. On "warm" and "cold" light. The eye and the sun. Popular scientific articles and reviews] Eksperimental'nye osnovaniia teorii otnositel'nosti, O "teplom" i "kholodnom" svete, Glaz i solntse, Nauchno-populiarnye i obzornye stat'i. 1956. 469 p. (MLRA 9:8)

1. Chlen-korrespondent AN SSSR (for Vul, Kravets)
(Physics)





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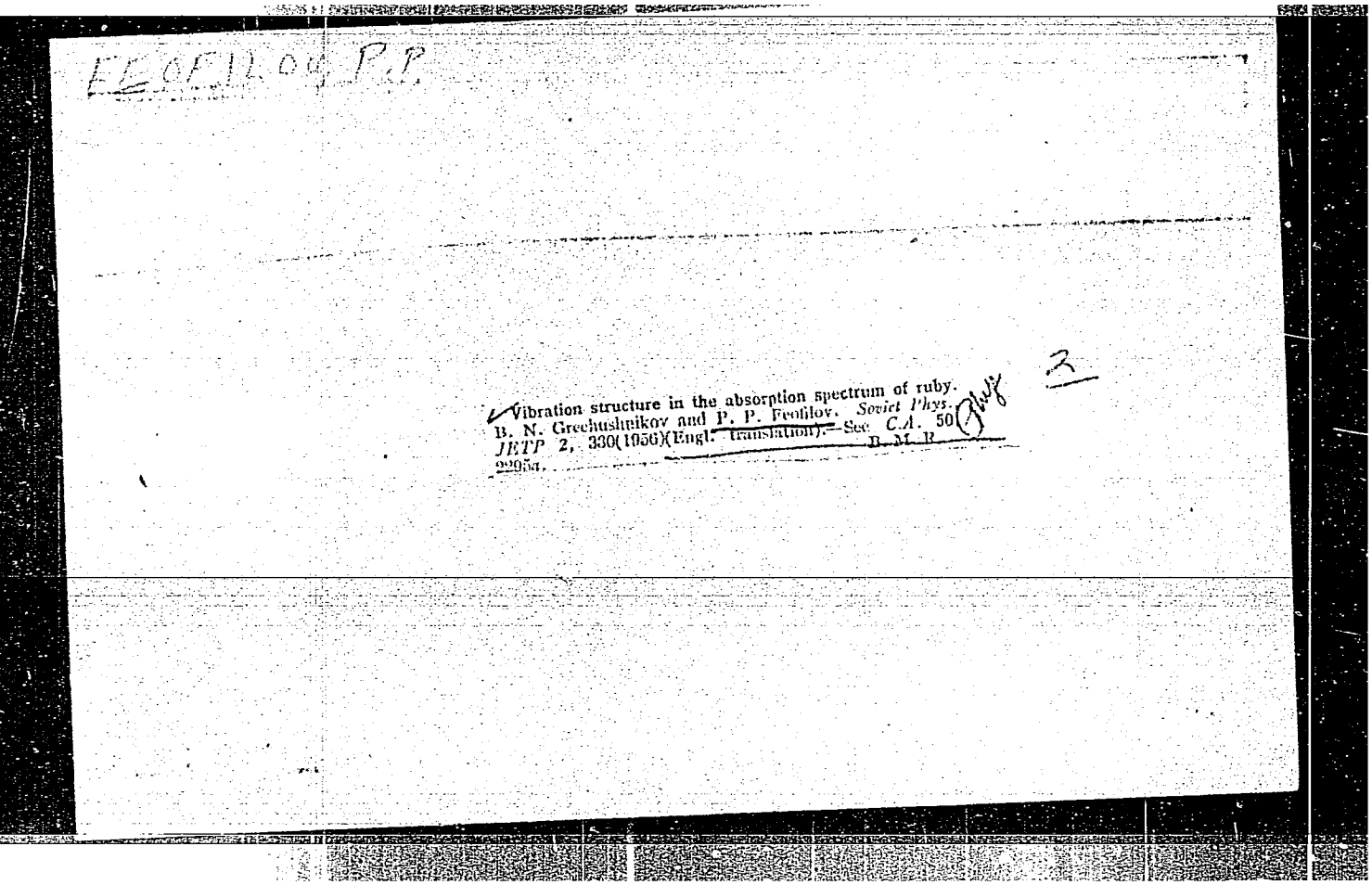

FEOFILOV P.P.

3

Vibration structure in the absorption spectrum of ruby. B. N. Grechushnikov and P. P. Feofilov. *Soviet Phys. JETP* 2, 330(1956)(Engl. translation).—Sec. C.A. 50 (Phys) 22054. B.M.R.

Feofilov, P.P.

FEOFILOV, P.P.

Polarized luminescence of cubic crystals. Izv.AN SSSR Ser.fiz.no.5: 552 '56. (Luminescence) (MLRA 9:9)

FEOFILOV, P.

Sergei Ivanovich Vavilov, March 24, 1891--Jan 25, 1951. Opt.i spektr. i no.2:107-112 Je '56. (MLRA 9:11)
(Vavilov, Sergei Ivanovich, 1891-1951)

FEOFILOV, P. P.

B-5

USSR/Crystals.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18340

Author : P.P. Feofilov.
Title : Nature of Elementary Oscillators and Polarization of Photoluminescence in Cubic System Crystals.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 2, 131-142

Abstract : The possibility of an experimental determination of the multipole order of elementary oscillators of luminescence centers orientated along different axes of symmetry of cubic system crystals is discussed in general. The theoretical computation of the dependence of the luminescence intensity and polarization on the reciprocal position of the observation direction and the electrical vector of the exciting light is carried out for three possible cases of the center orientation (along the axes of symmetry of the 2nd, 3rd and 4th order) and for all the possible combinations of dipole oscillators

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- 97 -

State Optical Inst.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18340

(electrical and magnetic, linear and circular). For the same oscillator combinations, the corresponding dependences are computed for randomly distributed centers (isotropic solutions). The computed dependences show that in the majority of cases, the multipole order of absorbing and radiating oscillators can be determined uniquely. The method is applicable in presence of polarized luminescence in investigated centers. Experimental data confirming the usefulness of the method are quoted.

FEOFILOV, P.

ARKHANGEL'SKAYA, V.; TOLSTOY, N.; FEOFILOV, P.

Fifth Conference on Luminescence (crystal phosphors). Opt. i spektr. 1 no.6:813-820 D '56. (MLRA 9:12)

(Tartu--Luminescence--Congresses)

FEOFILOV, P.P.

Category: USSR / Physical Chemistry - Crystals B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29743

Author : Feofilov P. P.
Inst : not given
Title : Anisotropy of Luminescent Coloration Centers in CsI-Tl Crystals

Orig Pub: Optika i spektroskopiya, 1956, 1, No 7, 952-954

Abstract: Investigation of anisotropy of radiation of coloration centers which arises on irradiations of crystals of CsI-Tl with ultraviolet, x-ray or gamma radiation. As a result of study of azimuth dependence of luminescence polarization it was found that luminescence polarization depends strongly upon the relative orientation of exciting electric vector and the crystallographic axes, and that the anisotropic luminescent coloration centers are oriented along 4-th order symmetry axes of CsI crystals. Study of polarization spectrum and of dependence of the degree of polarization upon wave length of radiation, shows that degree of polarization is greatly dependent on radiation wave length. This is attributed to the fact that the radiation band

Card : 1/2 -33-

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29743

B-5

constitutes, apparently, a superposition of at least two bands, corresponding to different types of coloration centers. A center model is proposed: the center consists of Tl^{+} ion, isomorphously replacing a Cs^{+} ion and associated with another defect (Tl^{+} ion or a hole), which is also localized within the cathion point.

Card : 2/2

Feofilov, P. P.

USSR/Optics - Physical Optics

K-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12923

Author : Tishenko, G.A., Feofilov, P.P.
Inst : -
Title : Luminescence of Color Centers in Crystals of Fluorite

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 4, 482-487

Abstract : An investigation was made of the contours of the absorption band and of the luminescence of the color centers in artificial crystals of fluorite. The bell-shaped form of the bands is satisfactorily described by the theory of impurity absorption (Pekar). The Stokes shift of the bands, calculated with formulas of this theory using data on the half widths of the bands, is also in agreement with the experimental data. The method of polarization of the luminescence diagrams was used to establish the electric dipole character of the elementary oscillators, describing the absorption and radiation. It is proposed that there

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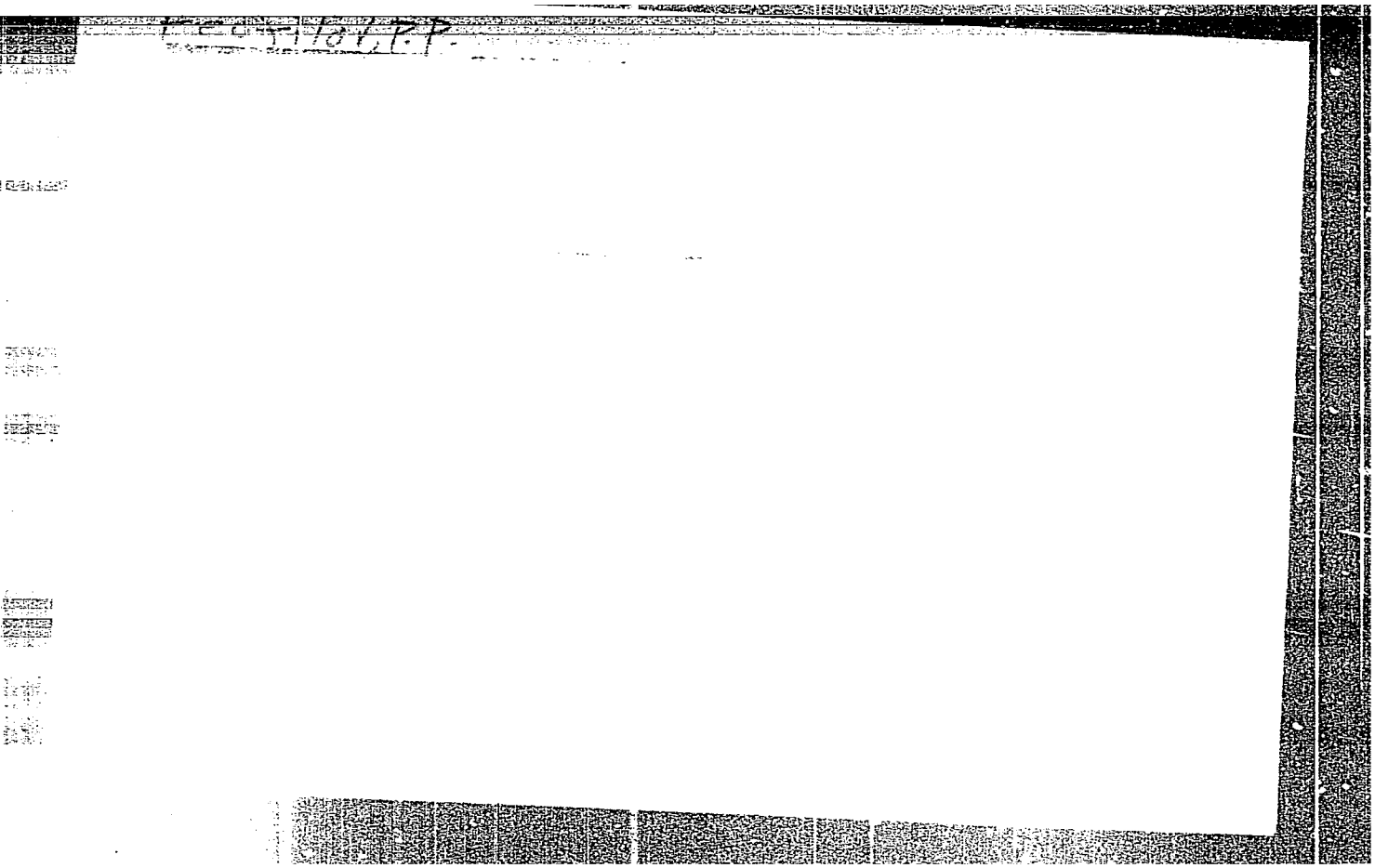
USSR/Optics - Physical Optics.

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12923

K-5

exists an infrared luminescence of complex (double) color centers in crystals of alkali-halide salts.

Card 2/2



FEOFILOV P.P.

USSR/ Physics - Scientific conferences

Card 1/1 Pub. 118 - 6/7

Authors : Neporent, B. S., and Feofilov, P. P.

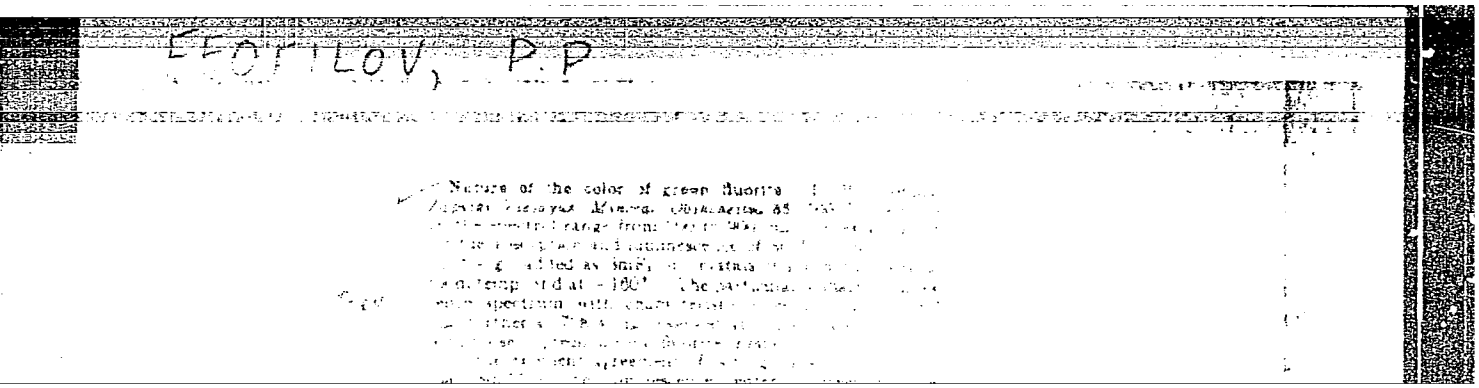
Title : The Fourth Luminescence Conference (Molecular Luminescence and Luminescence Analysis)

Periodical : Usp. Fiz. nauk, 58/1, 151-164, Jan 1956

Abstract : The fourth conference on luminescence is recounted. The conference, which took place at Minsk, BSSR, was called by the Acad. of Scs. of the BSSR, Physical Institute imeni P. N. Lebedev, the Acad. of Scs. of the USSR and the Optical Institute imeni S. I. Vavilov. More than two hundred (200) scientists of various fields participated in the conference. Possibilities for studying intermolecular processes through the observation and analysis of luminescence were discussed.

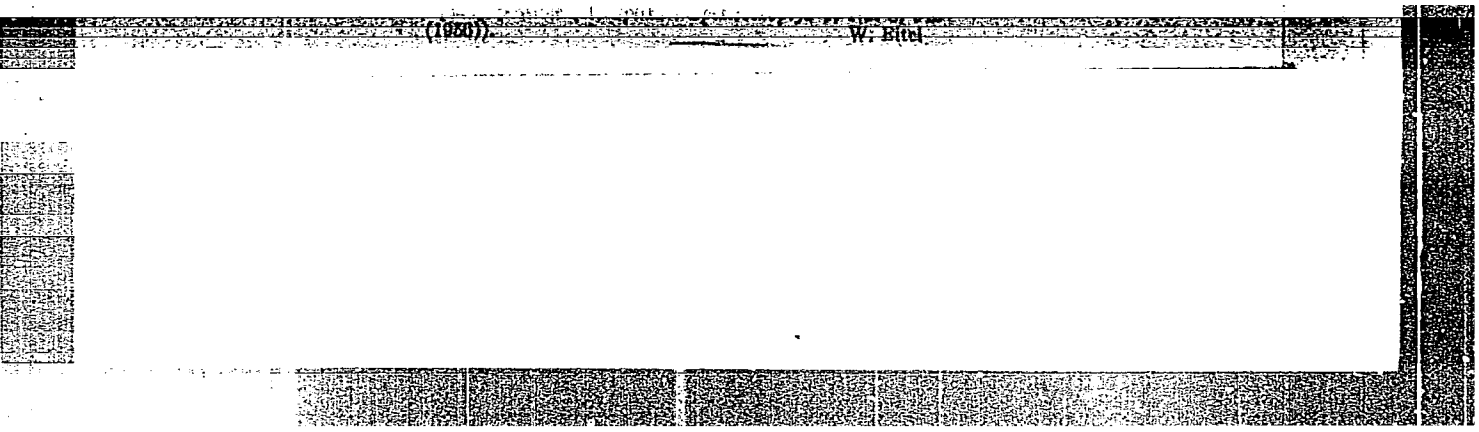
Institution : .....

Submitted : .....



FEOFILOV, P.P.

Nature of the color of green fluorite [illegible]



FEOFILOV, P. P.

USSR/Physical Chemistry. Crystals.

B-5

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14530

Author : I. V. Stepanov, P. P. Feofilov
Inst :
Title : On Two Types of Luminescence Spectra of Rare Earths in Artificial Fluorite Crystals

Orig Pub: Dokl. AN SSSR, 1956, 108, No 4, 615-618

Abstract: Monocrystals of synthetic CaF_2, activated by fluorides of rare earths (TR: Pr, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tu; $\sim 10^{-4}$g/g) yield two types of luminescence spectra (L), which differ sharply in number and position of the lines. Type II (anomal) is observed in crystals, grown in reducible conditions (addition to the batch of 10^{-3}g/g of graphite powder). Type I (normal) is prepared after heating the ready crystals in an open hearth at a temperature of 900-1000°. The (L) spectra are independent of λ excitation and do not change during damping. The absorption spectra of types I and II differ from one another.

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USSR/Physical Chemistry. Crystals. B-5

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14530

Abstract: The centers of both types can coexist in a crystal. The conclusion was made that in both cases TR are present in the form of ions of type Tr^{+3}, but the spectra depend on the closest environment. Crystals of type I are formed as a result of the substitution of one of the eight F^- ions surrounding TR^{+3} by an O^{2-} ion. The nature of substitution for type II was not established. In natural CaF_2 crystals, heated in an open hearth at 600-700°, the brilliance of (L) increases and spectral lines appear of type II (Er, Dy) and I (Sm). Heating at 900-1000° leads to a second change of the spectrum: the spectra of all TR becomes identical with the type I spectrum of synthetic CaF_2-TR.

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FEOFILOV, P.P.

USSR / Physical Chemistry. Crystals. B-5

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25922.

Author : V.A. Arkhangel'skaya, P.P. Feofilov.
Inst : Academy of Sciences of USSR
Title : Luminescence Spectra of Crystals of Some Iodides.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 5, 803 - 805

Abstract : The luminescence spectra (LS) of Hg, Pb and Ag iodides consist of series of bands at the temperature of liquid air. The distances between them and their width increase together with the shift towards the long wave region. The relative intensity of the bands depends very much on the conditions, under which the sample has been prepared, and on the excitation intensity. LS of red HgI_2 consists of a narrow band ($\Delta\lambda$ about 3 mu) at about 536 mu and wide bands at about 565 and 750 mu. The most short-wave band is shifted about 3 mu from the most long-wave exiton ab-

Card : 1/2

USSR / Physical Chemistry. Crystals.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25922

B-5

Abstract : sorption band towards the long-wave side. LS of PbI_2 consists of a narrow band ($\Delta\lambda$ about 2 mu) at about 497 mu and wide bands at 515 and 670 mu. Stokes' shift of the narrow band is about 2 mu. There are in LS of AgI a narrow band ($\Delta\lambda$ about 2 mu) at 432 mu and wide bands at 450, 527, 650 and 780 mu. Stokes' shift is about 3 mu. A similar correspondence of absorption spectra and LS is observed also in case of CdS. The displacement of maxima of narrow radiation bands relatively to the bands of exiton absorption is nearly the half of the band width. It is concluded that the narrow radiation bands are bands of resonance luminescence and that they are caused by the collapse of the exiton state.

Card : 2/2

PRIKHOT'KO, A.F.

24(7) p.3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Pisychnyy zbirnyk, vyp. 3/8/)

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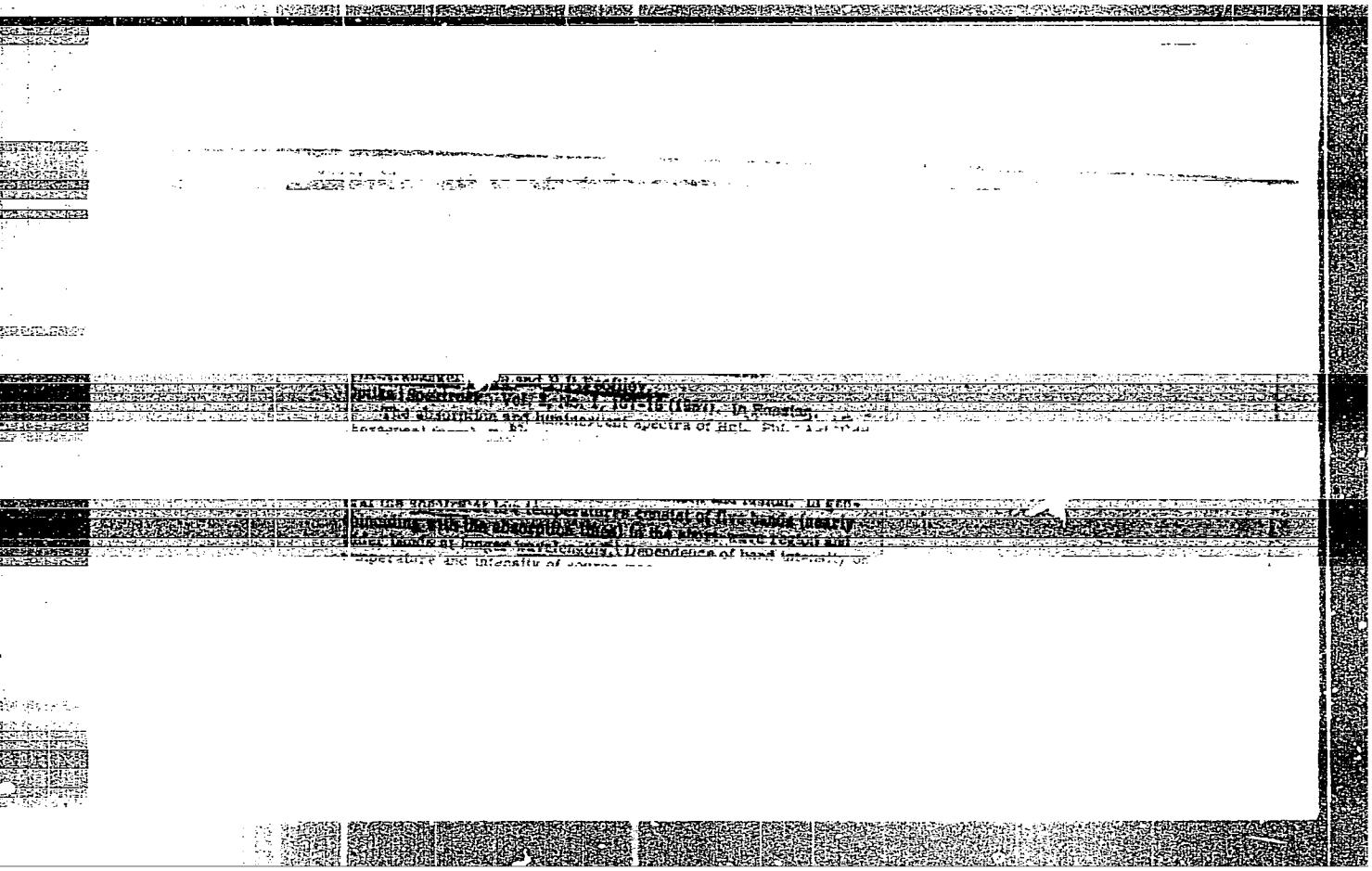
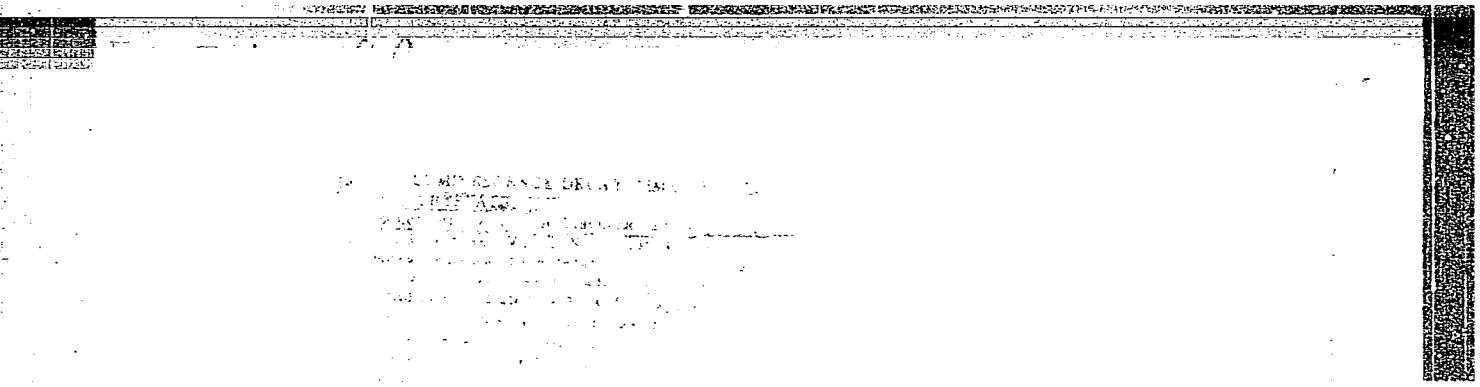
Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Lazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kormitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences; Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Olsauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Card 4/30

State Opt. Inst. im S. I. Vavilov





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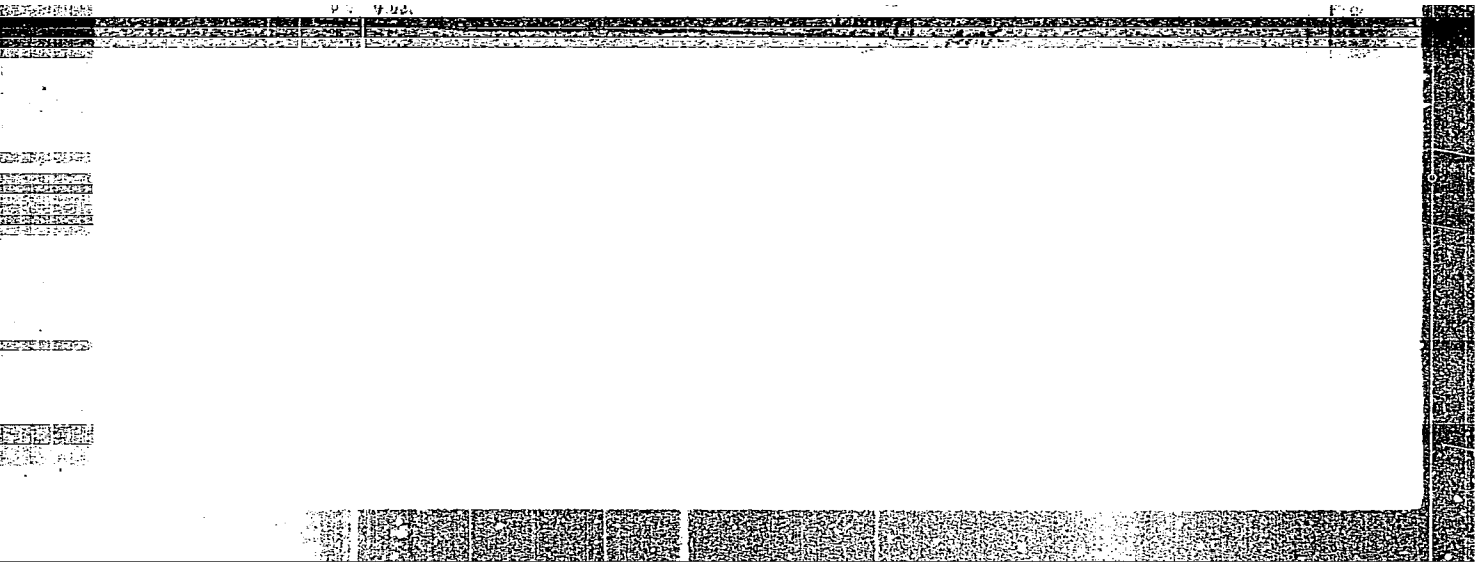

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Feofilov, P.P.

48-4-18/48

SUBJECT: USSR/Luminescence

AUTHORS: Arkhangel'skaya V. A. and Feofilov P.P.

TITLE: Luminescence of Some "Pure" Salts (Lyuminestsentsiya nekotorykh "Chistykh" soley).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #4, p 530 (USSR)

ABSTRACT: At the liquid air temperature, luminescence spectra of some non-activated salts (HgJ_2, PbJ_2, AgJ, CdS) consist of a series of bands whose width increases systematically toward the longer wavelengths.

The intensity of individual bands in luminescence spectra greatly depends on the intensity of exciting light. The intensity of short wavelength bands rises with excitation intensity steeper than linear, according to the expression;

$$I \sim E^{\gamma}$$

where $\gamma > 1$, whereas for long wavelength bands $\gamma \leqslant 1$.

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48-4-18/48

TITLE: Luminescence of Some "Pure" Salts (Lyuminestsentsiya nekotorykh "Chistykh" soley).

Narrow luminescence bands of HgJ_2 and CdS monocrystals are fully polarized in a direction perpendicular to the crystal optical axis. Bands with longer wavelength are also polarized partially or fully in the same direction.

The luminescence duration in narrow bands does not exceed 10^{-6} sec. In bands with longer wavelengths it can attain 10^{-4} sec.

Emission spectra, as well as absorption ones, are considered to be of resonance character.
Narrow bands in emission spectra can be ascribed to decay of exciton state, although this interpretation cannot be considered as final. The report was followed by a short discussion.
No references are cited.

INSTITUTION: Not indicated

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 2/2

Feofilov, P.P.

48-4-40/48

SUBJECT: USSR/Luminescence

AUTHORS: Bonch-Bruyevich A. M., Tishchenko G.A. and Feofilov P.P.

TITLE: Luminescence Duration of Color Centers in Ionic Crystals (Dlitel'nost' lyuminestsentsii tsentrov okrashivaniya v ionnykh kristallakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #4, p 590 (USSR)

ABSTRACT: The application of a new fluorometer "GOI" possessing a high resolution capacity and relatively high sensitivity to light made it possible to investigate the luminescence duration τ of complex color centers in ionic crystals of LiF; NaF and CaF_2. Investigated crystals were colored both photochemically, by means of hard radiation, and in the additive way (CaF_2).

In all cases the luminescence duration at room temperature was of the order of 10^{-8} to 10^{-9} sec and did not depend on the mode of coloring, intensity and wavelength of excitation light.

Two types of color centers were observed in LiF crystals subjected to the action of X-rays. They differed in their

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